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Kansas Forest Inventory, 1981

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FOREWORD

Forest Inventory and Analysis (formerly called Forest Survey) is a continuing endeavor as mandated by the Forest and Rangeland Renewable Resources Planning Act of 1974, which was preceded by the McSweeney-McNary Forest Research Act of 1928. Its objective is to inventory periodically the Nation's forest land to determine its extent, condition, and volume of timber, growth, and depletions. This kind of up-to-date information is essential for intelligent forest policies and programs. USDA Forest Service regional experiment stations are responsible for conducting these inventories and publishing summary reports for individual States. The North Central Forest Experiment Station is responsible for Forest Inventory and Analysis work done in Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, eastern South Dakota, and Wisconsin.

Fieldwork for the 1981 Kansas Forest Survey was begun in October 1980 and was completed in July 1981. Reports on the two previous surveys of Kansas' timber resources are dated 1936 and 1965.

Because of intensified field sampling, more accurate survey information was obtained during the 1981 survey than otherwise would have been feasible. This was made possible through the close cooperation provided the North Central Station by State and Extension Forestry, Kansas State University. Special funding requested by the Governor and appropriated by the 1980 Kansas Legislature allowed State and Extension Forestry to provide additional personnel to intensify the field sample. State and Extension Forestry also canvassed primary wood-using plants in the State, and those results were used to help estimate the quantity of timber products harvested in Kansas.

Aerial photos used in the Kansas forest inventory were provided by the USDA Agricultural Stabilization and Conservation Service.

HIGHLIGHTS

Forest Area

- Forest land totaled 1.4 million acres in 1981, 2.6 percent of the State's land area.
- Commercial forest area increased from 1,192 to 1,208 thousand acres between 1965 and 1981.
- Nonindustrial private parties own 96 percent of the commercial forest--farmers alone own 62 percent.
- The oak-hickory forest type leads all others with 317 thousand acres or 26 percent of the commercial area.
- Sawtimber stands are the most extensive stand-size class with 565 thousand acres or 47 percent of the commercial area.
- Stands aged 1-20 years make up the largest proportion of commercial forest (29 percent).
- Average site index is 62 feet.
- One-half of all commercial forest land is on deep, well-drained soils commonly found on cove sites and intermittent stream bottoms.
- Fifty percent of the commercial forest is within one-fourth mile of a maintained road.
- Noncommercial forest land amounts to 151 thousand acres.
- Wooded strips amount to 150 thousand acres and windbreaks amount to 186 thousand acres.
- Wooded pasture accounted for 210 thousand acres in 1981 compared to 369 thousand acres in 1965.

Timber Volume

- Volume of growing stock increased 42 percent from 1965 to 1981, from 503 to 711 million cubic feet.
- Sawtimber volume on commercial forest land increased 31 percent from 1965 (2.0 billion board feet) to 1981 (2.6 billion board feet).
- Wooded strip land and short-log trees account for an additional 463 million board feet, making a total State volume of 3.0 billion board feet.
- Linn County contains the largest growing-stock volume, 31 million cubic feet.
- Rough, rotten, short-log, and salvable dead tree volume amounts to 216 million cubic feet.
- Cottonwood leads all species in growing-stock volume with 19 percent of the total.
- Nearly all species increased in volume between surveys, but elm growing stock decreased drastically due to Dutch elm disease--from 89 million cubic feet in 1965 to 31 million cubic feet in 1981.
- Elm sawtimber volume dropped even more significantly--from 358 million board feet in 1965 to 70 million board feet in 1981.
- Fifty-two percent of the growing-stock volume is in trees in the 14-inch diameter class and smaller.
- Average growing-stock volume per acre was 589 cubic feet in 1981, compared to 422 cubic feet in 1965.
- Forty-six percent of the growing-stock volume is in stands 51-80 years old.
- Black walnut growing-stock volume amounts to 58 million cubic feet, and walnut sawtimber volume is 170 million board feet.
- Volume in growing-stock trees on nonforest land (wooded strips, wooded pasture, and windbreaks) amounts to 115 million cubic feet.

Stand Conditions

- Net annual growth of growing stock increased from 22 to 23 million cubic feet between inventories.
- Growing-stock growth rate was 3.3 percent of inventory in 1980.
- Growing-stock net growth per acre increased from 18.5 cubic feet in 1964 to 19.2 cubic feet in 1980.
- Sawtimber growth on commercial forest land was 64 million board feet in 1980, 2.5 percent of inventory.
- Mortality of growing-stock trees increased from 3.3 million cubic feet in 1964 to 3.8 million cubic feet in 1980.
- Disease caused 40 percent of the 1980 mortality.

Timber Use

- Growing-stock removals increased from 8.3 to 14.0 million cubic feet between inventories.
- Sawtimber removals jumped from 30.0 to 53.3 million board feet between 1964 and 1980.
- Cottonwood accounted for the largest volume of 1980 growing-stock removals--1.9 million cubic feet.
- Timber removals of black walnut amounted to 1.3 million cubic feet in 1980, third highest among species.
- Eighty-six percent of the 1980 growing-stock removals were harvested for roundwood products, primarily fuelwood and saw logs.
- Output of fuelwood from roundwood nearly quadrupled from 1964 to 1980--from 68 to 255 thousand cords.
- Private land supplied virtually all of the removals from growing stock.
- Growing-stock removals amounted to only 60 percent of growth in 1980.

Biomass

- Total biomass of all live trees at least 1 inch in d.b.h. averages 44 green tons per acre.
- Greatest live tree biomass density is in the cottonwood type with 77 green tons per acre.

- Shrub biomass is greatest in the willow and eastern redcedar-hardwood forest types where it averages 2,786 and 2,767 pounds per acre green weight, respectively.
- Among the tall shrubs, roughleaf dogwood produces the greatest average biomass with 269 pounds per acre.
- Buckbrush predominates among low shrubs with an average of 129 pounds per acre.

Projections

- The low removals option projection shows inventory increasing from 711 to 1,098 million cubic feet between 1981 and 2011, a 54-percent gain. Growth is projected to remain higher than removals throughout the period but to approach removals during the last decade.
- The high removals option projection shows inventory rising from 711 to 974 million cubic feet in 2008, then declining to 969 million cubic feet in 2011. Removals are projected to surpass growth by 2008.
- The trend of increased fuelwood production is expected to continue. If the best young growing-stock trees are taken for fuelwood, future potential to produce quality saw logs will be greatly reduced. However, proper utilization of lower quality trees for fuelwood provides an opportunity for improved forest management.

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KANSAS FOREST INVENTORY, 1981

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Forest land in Kansas, more plentiful in the east and reduced to narrow stringers along rivers and streams in the west, totaled 1.4 million acres in 1981. This is a slight increase of 8,900 acres over the 1965 forest area (Chase and Strickler 1968). Although only 2.6 percent of Kansas' total land area, forests return important economic and non-commodity benefits to the State. Forest land includes commercial forest, unproductive forest, and productive-reserved forest land (see Definition of Terms in Appendix).

Probably the greatest single impact on the State's forest land between the 1965 and 1981 forest inventories was the death of many elms from Dutch elm disease--particularly the larger diameter trees. In 1965, elm was second only to cottonwood as the most predominant species in the State; but by 1981, it had become relatively insignificant compared to a number of other species.

AREA

Commercial Forest Gains 1.4 Percent Between Inventories

Commercial forest area increased slightly from 1,192 to 1,208 thousand acres between 1965[1] and 1981. One-third of the 1981 commercial area is pastured. This grazing on land for which the primary use is wood production is an obstacle to the establishment and regeneration of high-quality stands.

The largest area of commercial forest is in the Northeastern Survey Unit (588 thousand acres), followed by the Southeastern Unit (437 thousand), and the Western Unit (183 thousand) (fig. 1).

[1]*Figures have been adjusted from those published after the 1965 survey to conform to 1981 statistics because of changes in survey definitions and procedures.*

Linn County (48,700 acres) and Chautauqua County (48,500 acres), both in the Southeastern Unit, and Miami County (46,300 acres) in the Northeastern Unit, lead all other counties in commercial forest area. But in terms of commercial forest as a percent of total land area, Leavenworth County in the Northeastern Unit leads all others with 14.6 percent. Linn County (12.7 percent), Miami County (12.3 percent), and Jefferson County (12.0 percent) follow.

Most Forest is Privately Owned

Nonindustrial private parties own 96 percent of the commercial forest (fig. 2). Farmers alone own 62 percent of the State's commercial area, and miscellaneous private parties own another 34 percent.

Fifty-eight percent of the nonindustrial private forest land is owned by parties with 10 to 50 acres of commercial forest. Another 25 percent is owned by parties with from 50 to 500 acres, and 2 percent is owned by parties with 500 to 2,500 acres, as shown in the following tabulation. These areas represent the total area owned by an individual, and may include one or more non-continguous tracts.

Size of holding (Acres)	**Area owned by nonindustrial private parties** (Thousand acres)
1-5	31.0
5-10	132.8
10-20	272.3
20-50	401.3
50-100	194.6
100-100	95.0
500-2,500	21.9
2,500-5,000	--
5,000+	8.6
Total	1,157.5

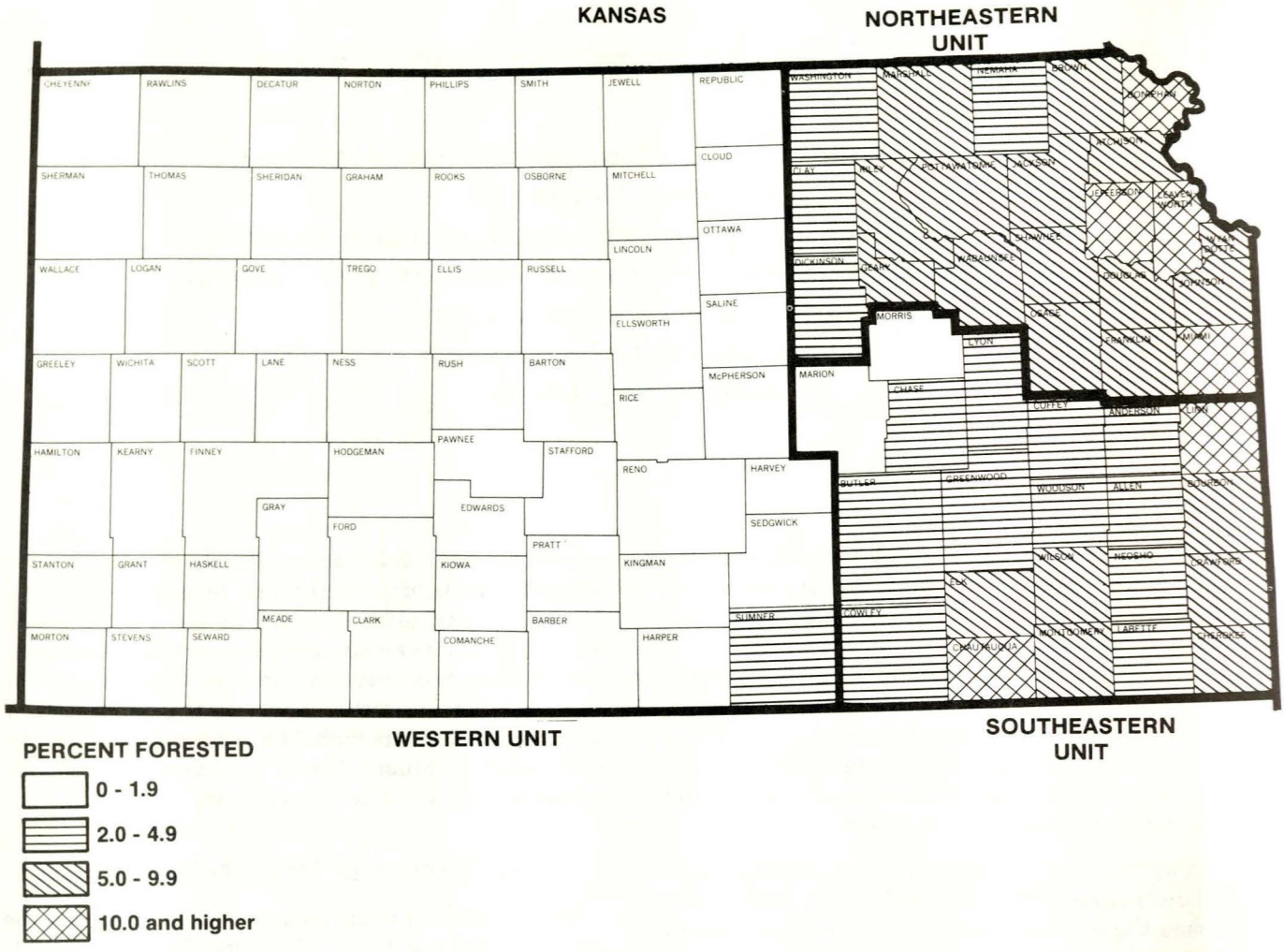

Figure 1.--*Survey units in Kansas and commercial forest area as a percent of all land, by county, 1981.*

Oak-Hickory Type Makes Up One-quarter of Commercial Area

The oak-hickory forest type, generally found on dry upland sites in the east, leads all others in area with 317 thousand acres (26 percent of the commercial area). This is a 71-percent increase from the 185 thousand acres in 1965. The elm-ash-cottonwood type, usually found on moist sites along stream bottoms, follows with 290 thousand acres, up 50 percent from the 193 thousand acres in 1965 (fig. 3). The lowland plains hardwood type, a mix of black walnut, hackberry, bur oak, soft maple, and boxelder generally found in coves and bottomlands, is the third largest forest type. It encompasses 266 thousand acres, a 20-percent gain over the 221 thousand acres in 1965. These three forest types together account for nearly three-fourths of the State's commercial forest area.

The upland elm-ash-locust type was the most extensive in 1965 with 229 thousand acres. But by 1981 it had declined 52 percent to 110 thousand acres, making it the fourth largest type. The high mortality rate of elm from Dutch elm disease between the two surveys undoubtedly accounts for some of the shift from the elm-ash-locust type to some of the other more predominant types in 1981. Other types that lost area between surveys include upland plains hardwoods that declined 56 percent and willow that declined 52 percent. Nonstocked area fell from 147 thousand acres in 1965 to 45 thousand acres in 1981, a 69-percent drop. It can be assumed that increased stocking levels in many cases shifted these nonstocked acres into other types in the later survey.

Sawtimber Stands Predominate

Sawtimber stands in Kansas account for the largest area of any stand-size class--565 thousand acres or 47 percent of the total commercial area. This is slightly higher than the national average for proportion of sawtimber stands (45 percent), but much less than the 57

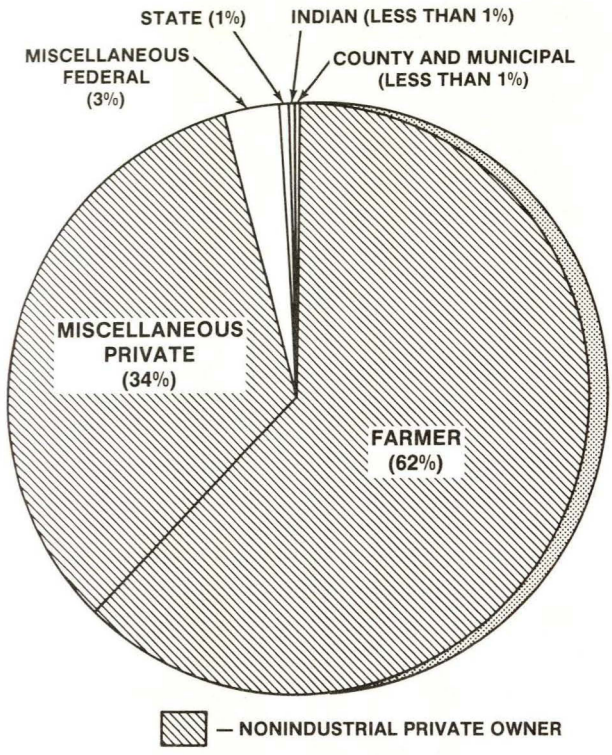

Figure 2.--*Area of commercial forest land by ownership class, Kansas, 1981.*

Figure 3.--*Elm-ash-cottonwood forest type paralleling a dry stream bed. This type is usually found on first or second bottoms of streams.*

percent estimated during the 1965 Kansas inventory. This drop in sawtimber acreage can be partially explained by the death of elm sawtimber trees. Sawtimber stand acreage in the upland elm-ash-locust type dropped from 106,100 acres in 1965 to 16,800 acres in 1981.

Sapling and seedling stands, with 363 thousand acres in 1981, are the second largest stand-size class. This class represents 30 percent of the commercial forest in 1981, compared to 12 percent in 1965. Nationwide, the average proportion of sapling and seedling stands is 24 percent of the commercial forest.

Poletimber stands account for 234 thousand acres in 1981 or 19 percent of the commercial area, the same proportion as in 1965. Throughout the U.S., poletimber stands average 28 percent of the total commercial area.

Nonstocked areas amounted to 45 thousand acres in 1981 (4 percent of the total), a big drop from the 147 thousand acres in 1965 (12 percent).

Largest areas of sawtimber stands are in the lowland plains hardwoods type (171 thousand acres), the elm-ash-cottonwood type (145 thousand acres), and the oak-hickory type (142 thousand acres). But the highest proportion of any forest type in sawtimber stands is the 88 percent of the cottonwood type. The eastern redcedar-hardwood type, which increased in area from 2.7 to 27.5 thousand acres between surveys, contains 80 percent of its area in sapling and seedling stands--highest of any type.

Largest Area in Stands Aged 1-20 Years

The distribution of commercial forest by stand-age class shows more area aged 1-20 years and less area aged 21-50 years (fig. 4). Stands 11-20 years old are most numerous with 193 thousand acres or 16 percent of the commercial forest area, and stands aged 1-10 years follow with 155 thousand acres or 13 percent of the total. Together, these two classes generally represent the new stands established since the last survey.

An ideal distribution of age classes from a forest management perspective is an equal area in each 10-year class through the rotation age[2] of the particular forest type and no area in classes beyond rotation age. The diminished area of stands 21-50 years old means a future shortage of mature timber in some forest types when they reach rotation age--primarily the elm-ash-cottonwood and lowland plains hardwoods types.

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[2]*Rotation age is the period of years required to establish and grow timber crops to a specified condition of maturity.*

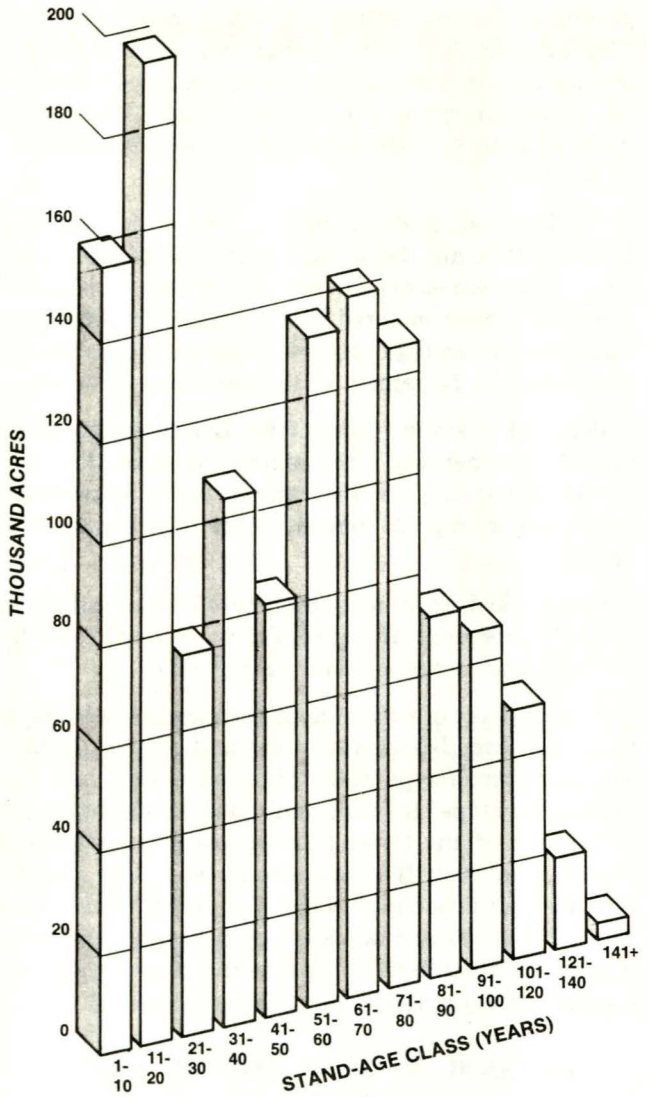

Figure 4.--*Area of commercial forest land by stand-age class, Kansas, 1981.*

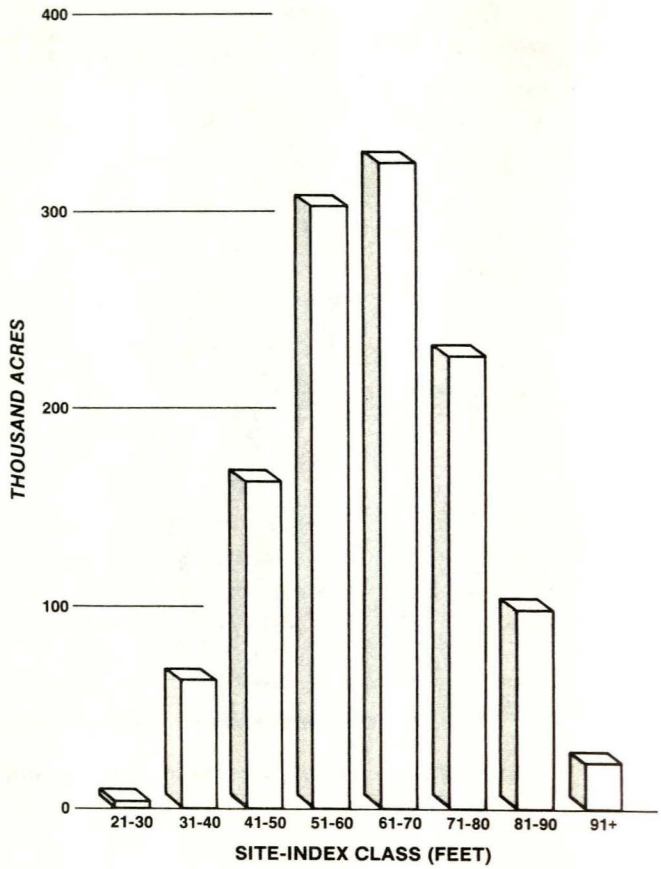

Figure 5.--*Area of commercial forest land by site-index class, Kansas, 1981.*

However, this imbalance in age classes is not strongly reflected in the diameter distribution of growing-stock trees of several desirable species such as ash, black walnut, and hackberry. Comparisons of the growing-stock diameter distribution for number of trees or cubic foot volume would indicate an opportunity to offset much of the effects of this age imbalance through improved forest management to favor these desirable species.

Average Site Class Highest of Plains States

Site class is one means of estimating forest site quality. Site class describes forest land in terms of its inherent capacity to grow wood based on fully stocked natural stands. Site class values are the cubic feet of growth per acre per year expected from such stands.

The weighted average site class for Kansas is 56.8 cubic feet of growth per acre per year, compared to a weighted average for the Plains States[3] of 54.1. (Commercial forest land can produce more than 20 cubic feet per acre of annual growth under management.)

Average Site Index is 62 Feet

Another way of estimating forest site quality is through use of site index information. Site index is a means of classifying forest land in terms of height growth of dominant or codominant trees of representative species within a forest type at 50 years of age. Eighty-one percent of the commercial forest area (979 thousand acres) grows trees taller than 51 feet at age 50, and 29 percent of the total grows trees taller than 71 feet (fig. 5).

[3]*In this paper the Plains States are considered to be North Dakota, eastern South Dakota (east of the 103rd meridian), Nebraska, and Kansas.*

Site index values differ by forest type. A high value for one type may be a low value for another type. The weighted average site index for all types is 62.2 feet. The highest weighted average is 67.5 feet for the lowland plains hardwoods type, followed by elm-ash-cottonwood (66.9 feet), upland plains hardwoods (64.3 feet), cottonwood (64.1 feet), and willow (64.0 feet). The lowest weighted average is the 45.2 feet in the eastern redcedar-hardwood type.

Half of Area on Deep, Well-drained Soils

Yet another way forest site quality can be appraised is by considering the area in each physiographic class. Physiographic class is a measure of soil and water conditions on a site that affect tree growth. The five classes range from exceptionally wet sites (hydric) to very dry sites (xeric). Best growing conditions for most species are in the class midway between these two extremes (mesic). Mesic sites are the deep, well-drained soils commonly found on cove sites and bottomlands along intermittent streams. One-half of the commercial forest area is on mesic sites, including 79 percent of the lowland plains hardwoods type, 70 percent of the elm-ash-cottonwood type, and 42 percent of the oak-hickory type (table 1).

Stocking Could be Improved

The stocking picture varies greatly depending upon whether only growing-stock trees or all live trees are considered. When all live trees, including rough and rotten trees and noncommercial species are considered, the area of commercial forest land at least medium stocked (61 percent stocked or better) is 1,035,000 acres or 86 percent of the total. This represents little change from 1965 when 1,014,000 acres (85 percent) were medium or better stocked with all live trees.

When only growing-stock trees are considered, the stocking situation has improved decidedly. Commercial forest acreage medium or better stocked with growing-stock trees increased from 161,500 acres (14 percent) in 1965 to 639,200 acres (53 percent) in 1981. Of this total, 95,000 acres are well stocked with growing-stock trees. The remainder of the commercial forest is either poorly stocked with growing-stock trees (523,300 acres) or nonstocked (45,400 acres).

Still, the 47 percent of commercial forest land poorly stocked or nonstocked with growing-stock trees represents a less than desirable situation. This land could produce trees much more efficiently if better stocked. Stocking is poorest in sapling and seedling stands where 57 percent of the area is poorly stocked with growing-stock trees. A larger proportion of the upland elm-ash-locust forest type is poorly stocked (66 percent) than any other type, although the eastern redcedar-hardwood (58 percent) and upland plains hardwoods types (58 percent) follow closely.

Half of Forest Within One-quarter Mile of Road

Fifty percent of the commercial forest area in Kansas is within one-fourth mile of a maintained road (one

Table 1.--*Area of commercial forest land by forest type and physiographic class, Kansas, 1981*

(In thousand acres)

Forest type	All classes	Physiographic class				
		Hydric	Hydro-mesic	Mesic	Xero-mesic	Xeric
Eastern redcedar-hardwood	27.5	--	--	2.4	25.1	--
Oak-hickory	316.6	2.6	7.6	132.7	155.5	18.2
Post-blackjack oak	30.9	--	1.2	9.8	17.6	2.3
Upland plains hardwoods	49.4	--	--	1.2	46.5	1.7
Elm-ash-cottonwood	289.6	9.0	77.1	203.5	--	--
Cottonwood	68.1	3.9	20.2	29.9	6.9	7.2
Willow	4.2	--	3.4	--	0.8	--
Lowland plains hardwoods	265.9	2.5	52.3	211.1	--	--
Upland elm-ash-locust	110.3	--	--	--	100.5	9.8
Nonstocked	45.4	9.1	3.0	11.5	19.7	2.1
All types	1,207.9	27.1	164.8	602.1	372.6	41.3

graded at least once a year), and 96 percent of it is within 1 mile of a road:

Distance to road (Miles)	Area of commercial forest land (Thousand acres)	Percent
0-⅛	240.2	20
⅛-¼	363.8	30
¼-1	560.2	46
1-2½	19.3	2
2½-5	16.1	1
5-10	--	--
10-20	8.3	1
20+	--	--
Total	1,207.9	100

One-fifth of Forest Within Quarter Mile of Open Water

Proximity of timber to open water may affect its suitability for harvest because of multiple use (primarily wildlife and recreation, and accessibility considerations. Twenty-one percent of the State's commercial forest area is within one-fourth mile of a lake or pond at least 5 acres in area or a stream at least 66 feet wide. Fourteen percent is within one-eighth mile of open water:

Distance to open water (Miles)	Area of commercial forest land (Thousand acres)	Percent
0-⅛	169.4	14
⅛-¼	81.0	7
¼-1	201.2	17
1-2½	211.6	17
2½-5	167.6	14
5-10	106.6	9
10-20	111.5	9
20+	159.0	13
Total	1,207.9	100

Noncommercial Forest Land Amounts to 150,800 Acres

Kansas also has two kinds of forest land on which industrial wood is not harvested: unproductive forest (128,400 acres) and productive-reserved forest land (22,400 acres).

All of the unproductive forest is owned by farmers and miscellaneous private parties, and most is in the post-blackjack oak type (59 percent), the eastern redcedar-hardwood type (13 percent), and the oak-hickory type (10 percent).

The productive-reserved forest land, which includes Christmas tree plantations, is primarily owned by public agencies. The oak-hickory type (44 percent) and the eastern redcedar-hardwood type (33 percent) account for most of the productive-reserved area.

Wooded Strips and Windbreaks--An Important Resource

The area of nonforest land with trees (1,189 thousand acres) almost equals the area of commercial forest land in the State. Trees are usually very sparse on this category of land except on wooded strips and windbreaks.

Wooded strips amount to 150,000 acres in Kansas (fig. 6). Most of these strips are in the elm-ash-cottonwood type (51,600 acres) and the lowland plains hardwoods type (49,900 acres), and almost all are owned by private parties. Only 10 percent of the area is in sawtimber stands, and almost equal amounts are in poletimber (39 percent) and sapling and seedling stands (38 percent). Sixty-one percent of the wooded strip area supports stands aged 30 years or less and 73 percent supports stands 40 years old and younger. The significance of wooded strips is indicated by the 92 million cubic feet of growing-stock trees and the 315 million board feet of sawtimber and short-log trees they contain. Although small tract size sometimes imposes constraints on logging, these wooded strips are frequently logged in conjunction with adjacent commercial land.

Windbreaks total 186,300 acres in the State (fig. 7). Because their primary purpose is protection from wind, these windbreaks are of little significance for timber supply except for occasional firewood cuttings. Windbreaks are more numerous in the Western Unit (76,400 acres), compared with the Southeastern Unit (66,900 acres) and the Northeastern Unit (43,000 acres). Both wooded strips and windbreaks are important habitat for wildlife.

One other significant class of nonforest land with trees is wooded pasture--grazed land with more than 16.7 percent stocking in live trees, but less than 25 percent stocking in growing-stock trees. In 1981, wooded pasture accounted for 210,000 acres--a 43-percent drop from 369,000 acres in 1965. Some of the wooded pasture acreage in 1965 may have shifted into the commercial forest acreage because of the increased growth and stocking of growing-stock trees. For example, this might account for the increase in acreage of the eastern redcedar-hardwood type from 2.7 to 27.5 thousand acres between surveys.

Figure 6.--*Wooded strips, like these following a meandering stream, are land that meets all the requirements for commercial forest land except that it supports trees in stands less than 120 feet wide.*

VOLUME

Timber Volume Shows Substantial Gain Between Inventories

Volume of growing stock on commercial forest land in Kansas increased 42 percent between 1965 (503 million cubic feet) and 1981 (711 million cubic feet). The continuing surplus of growth over timber removals between inventories causes these building inventory volumes.

The minor softwood growing-stock volume, which is entirely eastern redcedar, had surged to 21 times its 1965 volume by 1981. Hardwood volume, which accounts for 99 percent of the growing-stock total, gained 41 percent between inventories:

Species group	Growing-stock volume	
	1965	1981
	(Thousand cubic feet)	
Softwoods	216	4,591
Hardwoods	502,384	706,724
Total	502,600	711,315

Sawtimber volume on commercial forest land increased 31 percent, from 2.0 billion board feet[4] in 1965 to 2.6 billion in 1981. Softwood sawtimber volume showed an extraordinary expansion similar to the softwood growing-stock volume, but hardwoods showed a more modest gain:

[4]*International ¼-inch rule.*

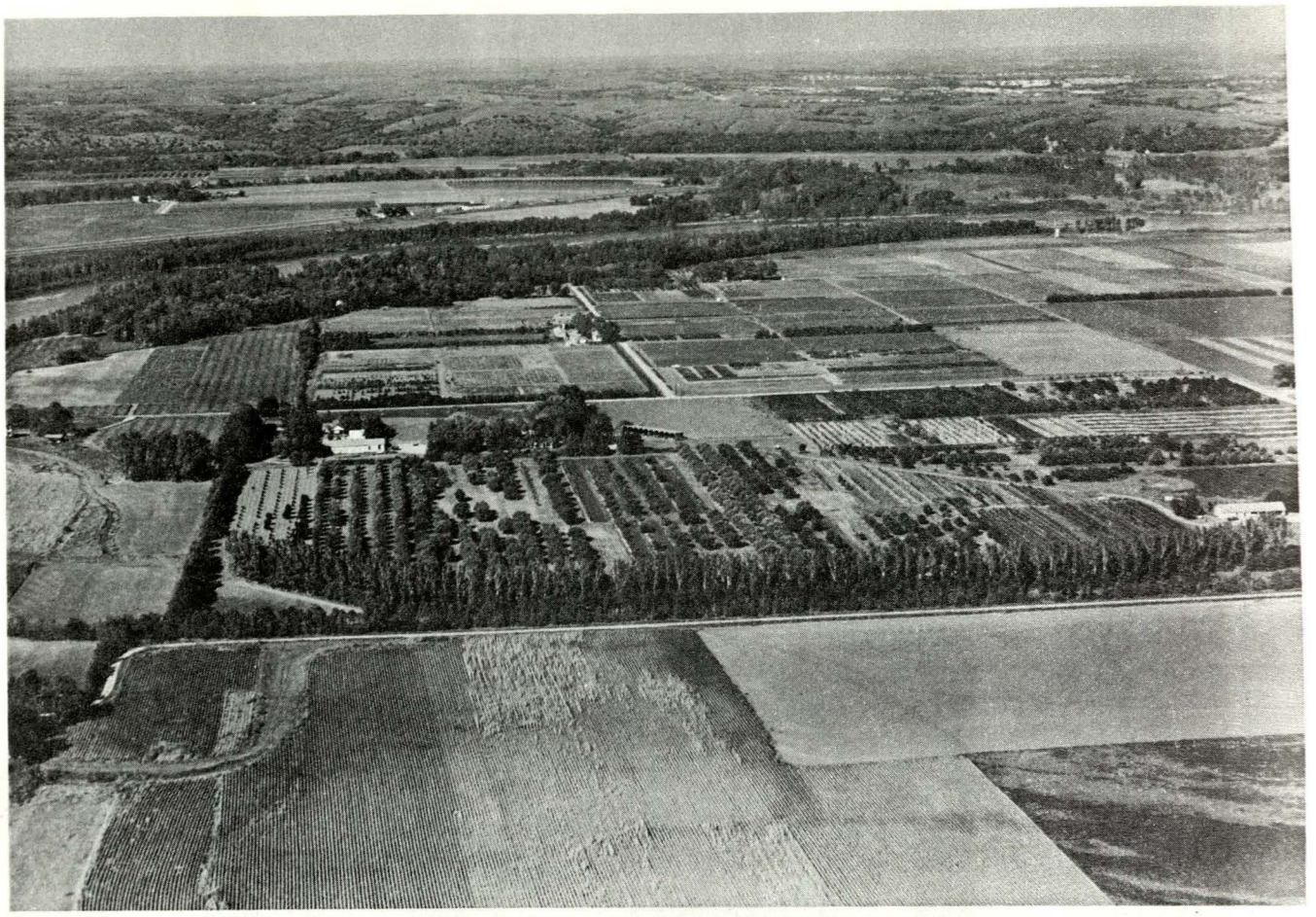

Figure 7.--*Windbreaks, like the one above, are trees planted in strips less than 120 feet wide, used for protecting soil, fields, and buildings.*

Species group	Sawtimber volume	
	1965	1981
	(Million board feet)	
Softwoods	0.5	10.9
Hardwoods	1,953.0	2,555.3
Total	1,953.5	2,566.2

The Northeastern Survey Unit contains the largest growing-stock volume in the State. However, the Western Unit, which has the smallest volume of the three Survey Units, showed the greatest percent of increase between inventories (table 2).

Table 2.--*Net volume of growing stock and sawtimber in 1965 and 1981 by Forest Survey Unit and change since 1965, Kansas*

Forest Survey Unit	Growing-stock volume		Change since 1965	Sawtimber volume		Change since 1965
	1965	1981		1965	1981	
	Thousand cubic feet		*Percent*	*Thousand board feet*[1]		*Percent*
Northeastern	233,033	315,093	+ 35	879,200	1,107,613	+ 26
Southeastern	188,375	249,128	+ 32	738,579	828,546	+ 12
Western	81,192	147,094	+ 81	335,767	630,070	+ 88
Total	502,600	711,315	+ 42	1,953,546	2,566,229	+ 31

[1]International ¼-inch rule.

Linn County, with 31 million cubic feet, contains the largest growing-stock volume among counties, followed by Leavenworth (28 million cubic feet), Miami (26 million), Chautauqua (24 million), Bourbon (23 million), and Pottawatomie (22 million) (fig. 8).

Nongrowing-stock Volume is 216 Million Cubic Feet

In addition to the volume in growing-stock trees discussed thus far, rough and rotten, short-log, and salvable dead tree volume adds another 216 million cubic feet. Total volume on commercial forest land in Kansas, then, is 927 million cubic feet (table 3).

The volume in short-log trees is 148 million board feet, which brings total sawtimber volume on commercial forest land to 2,714 million board feet in the State. The volume in sawtimber trees and short-log trees on wooded strips adds another 315 million board feet, bringing the total volume to 3,029 million board feet.

Table 3.--*Net volume of timber on commercial forest land by class of timber and softwoods and hardwoods, Kansas, 1981*

(In million cubic feet)

Class of timber	All species	Softwoods	Hardwoods
Growing stock			
Sawtimber	490.8	1.9	488.9
Poletimber	220.5	2.7	217.8
Total growing stock	711.3	4.6	706.7
Rough and rotten cull	143.8	0.5	143.3
Short-log cull	67.4	0.4	67.0
Salvable dead	4.5	0.1	4.4
All classes	927.0	5.6	921.4

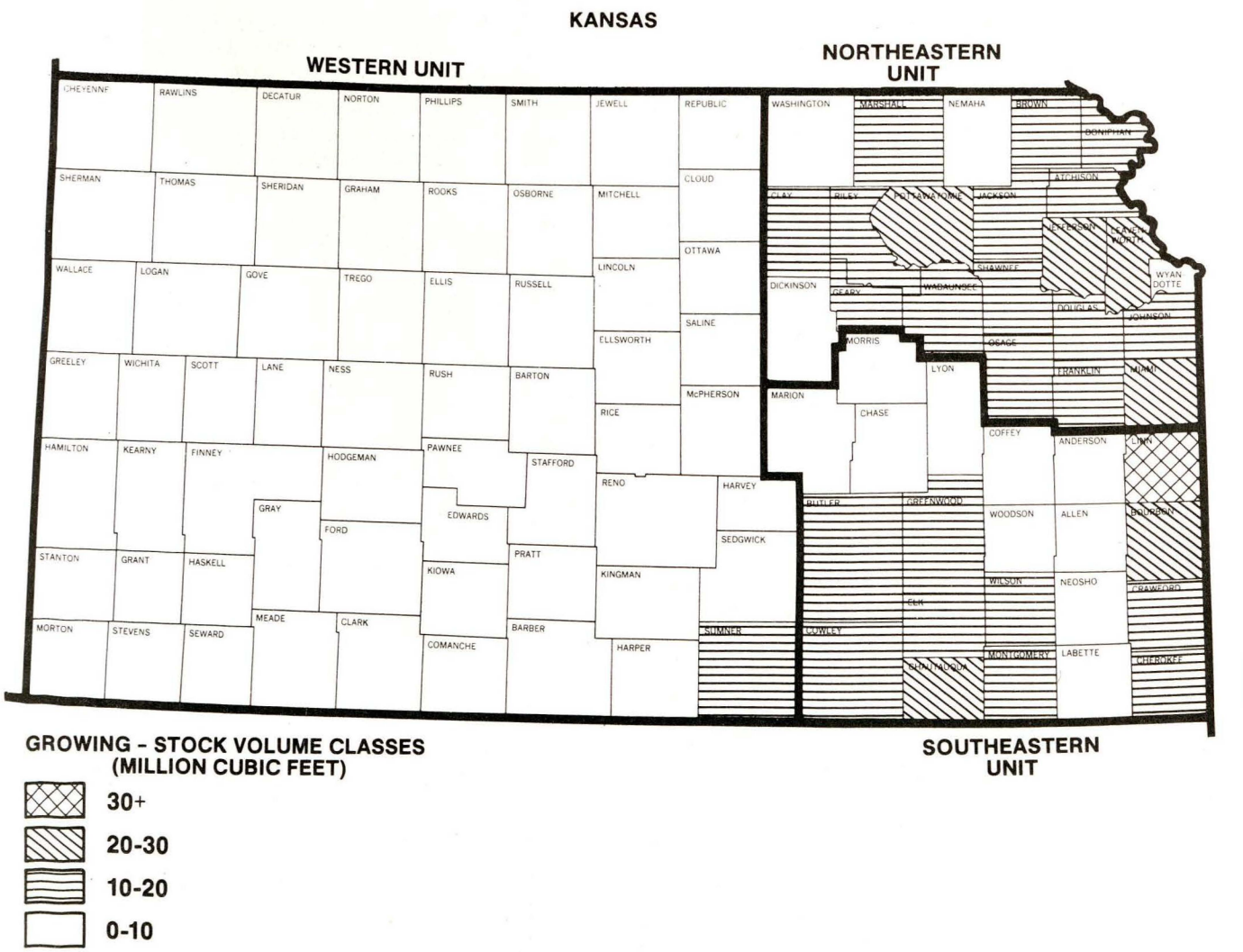

Figure 8.--*Growing-stock volume in Kansas counties, 1981.*

Although cull and salvable dead trees take up space that could be used by potentially more valuable growing-stock trees, some of them provide homes for cavity-nesting birds and other wildlife. And many of these trees can be used for timber products such as saw logs or bolts and fuelwood.

Cottonwood First in Growing-stock Volume with One-fifth of Total

In both 1965 and 1981, cottonwood led all other species in growing-stock and sawtimber volumes. The 134 million cubic feet of cottonwood represents 19 percent of the total growing-stock volume on commercial forest land in 1981 and is a 33-percent increase over the 1965 cottonwood growing-stock volume. In 1965, elm was second only to cottonwood in both growing-stock and sawtimber volumes, with a large concentration of volumes in the larger, overmature trees most susceptible to Dutch elm disease. The decimation of elm by the disease between the two surveys--elm growing-stock volume decreased from 89 to 31 million cubic feet--caused a reordering of volume rankings except for cottonwood. Hackberry moved up to second in 1981 with 87 million cubic feet, a 77-percent gain over its 1965 volume of 49 million cubic feet when it ranked third behind cottonwood and elm. Ash (62 million cubic feet), bur oak (61 million), and black walnut (58 million) are other species with large volumes. Black walnut, highly valued and in great demand for furniture, cabinets, gun stocks and other high-quality products, increased 57 percent from its 1965 volume of 37 million cubic feet. Sycamore was the only other species besides elm to decline in volume between surveys--a much more modest decline from 25 to 22 million cubic feet. Select white oaks (see Principal Tree and Shrub Species Groups in Kansas in Appendix) made the largest proportional increase between inventories, almost tripling from 12 to 34 million cubic feet.

The order of species by sawtimber volume is somewhat different from that of growing stock. Cottonwood dominates with 24 percent of the total, expanding from 459 million board feet in 1965 to 610 million board feet in 1981. Hackberry contains the second largest sawtimber volume, with 300 million board feet. Bur oak ranks third in sawtimber volume with 286 million board feet, ash is fourth with 186 million board feet, and select red oaks are fifth with 183 million board feet. Black walnut volume follows with 170 million board feet. As might be expected from its 1965 concentration of volume in the larger diameters, elm sawtimber volume plunged even more sharply than growing-stock volume--from 358 to 70 million board feet between inventories.

Nonindustrial private owners account for 94 percent of the growing-stock volume. Farmers clearly dominate with 60 percent of the total, and miscellaneous private parties own 34 percent of the volume. Public agencies own the remaining 6 percent.

Half of Growing-stock Volume in Trees 14 Inches in Diameter and Smaller

Fifty-two percent of the State's 1981 volume of growing stock is in trees in the 14-inch diameter class and smaller (fig. 9). There are no gaps in total growing-stock volume between succeeding diameter classes that might cause future supply problems, although uneven volumes by diameter class may pose problems in the future supply of certain species--especially soft maple, basswood and sycamore. Nineteen percent of the volume is in trees 24 inches in diameter and greater, due largely to the high proportions of cottonwood and bur oak volumes in these bigger trees. Forty-four percent of the total cottonwood volume and 38 percent of the bur oak volume are in these larger trees. Sixty-four percent of the cumulative growing-stock volume of ash, hackberry, and black walnut--among the 5 species with the greatest volumes--is in diameter classes 14 inches and smaller. The proportion in these classes is 76 percent for black walnut.

The 1981 growing-stock volumes are greater than the 1965 volumes in each diameter class, as shown in figure 9.

Average volume per acre of growing stock on commercial forest land in 1981 was 589 cubic feet compared to 422 cubic feet in 1965. Average volume per acre was highest in the cottonwood forest type (1,397 cubic feet), followed by the lowland plains hardwoods type (672), oak-hickory type (612), elm-ash-cottonwood type (596), and the post-blackjack oak type (555).

The average sawtimber volume per acre in 1981 was 2,125 board feet compared to 1,640 board feet in 1965. The cottonwood type leads by an even wider margin than for growing stock, averaging 6,024 board feet per acre, followed by lowland plains hardwood (2,564 board feet), elm-ash-cottonwood (2,162), and oak-hickory (2,114).

Three-quarters of the total growing-stock volume is in three forest types--oak-hickory (27 percent), lowland plains hardwoods (25 percent), and elm-ash-cottonwood (24 percent).

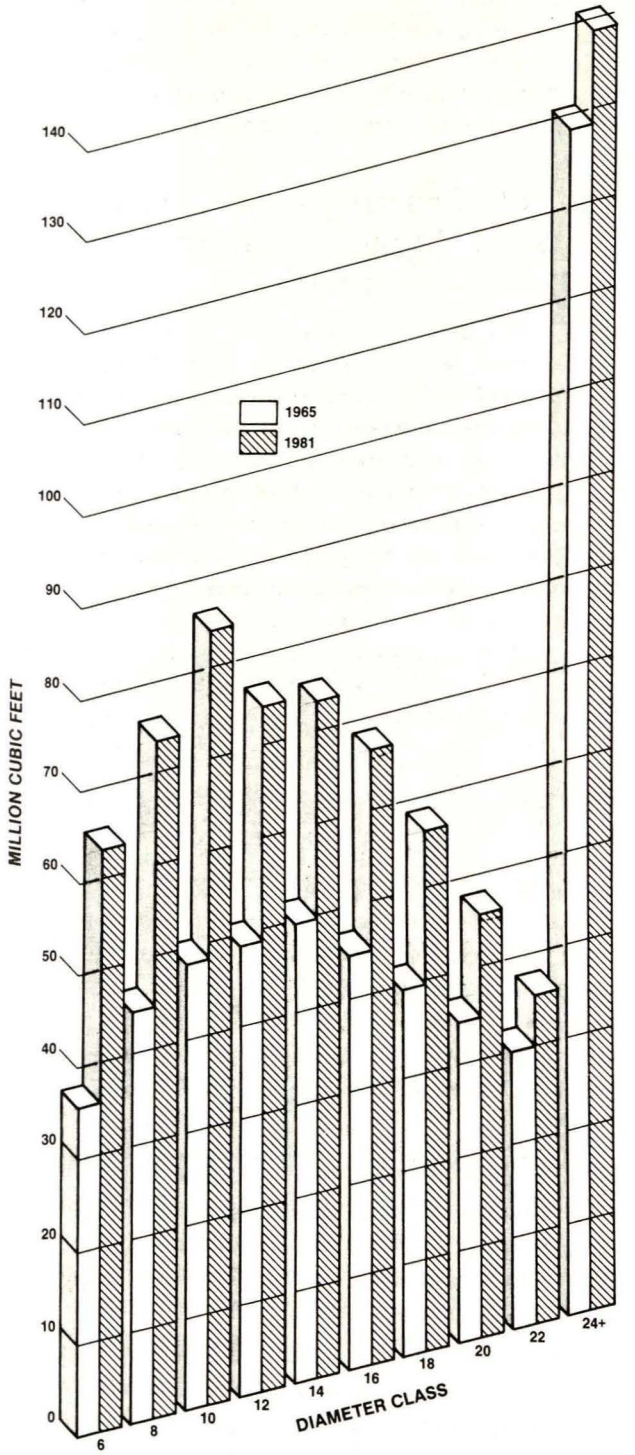

Figure 9.--*Net volume of growing stock on commercial forest land, by diameter class, Kansas, 1965 and 1981.*

Largest Volume in Stands Aged 51-80 Years

Forty-six percent of the total growing-stock volume is concentrated in stands 51-80 years old (fig. 10). This

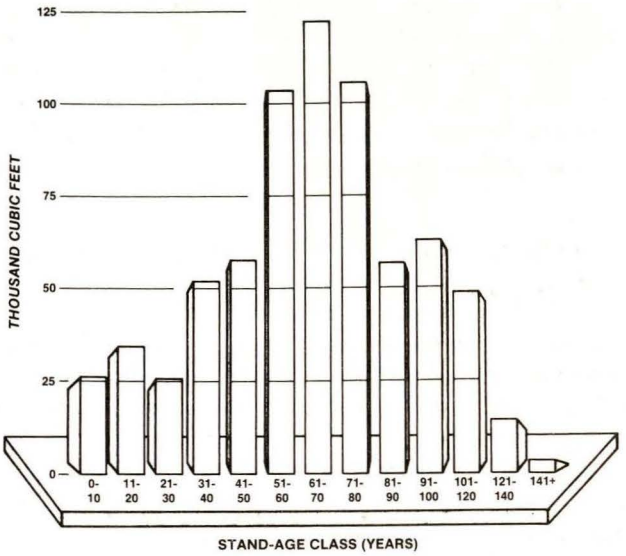

Figure 10.--*Net volume of growing stock on commercial forest land by stand-age class, Kansas, 1981.*

bulge corresponds to a similar bulge in the area of commercial forest land for those stand-age classes. These stands, which originated between 1901 and 1930, were among the first to become established as the public became more aware of its forests.

Sawtimber Quality is Good

The butt log of every sawtimber tree tallied in the Kansas inventory was log-graded. The total volume in sawtimber trees was grouped by butt log grade based on the sampled tree volumes by butt log grade. These volumes could not be converted to whole-tree log grades because the means to make this conversion accurately are not available. Volumes, then, represent the total volume in trees with the indicated butt log grade. However, experience in other States where butt log grade was converted to whole tree log grade indicates that the volume distribution by whole tree log grades is not much different from that of volumes in trees by butt log grade.

The volume of sawtimber is fairly evenly divided among the best three of the four log grades used to estimate saw log quality in Kansas (fig. 11). (See Log Grade section in Appendix for an explanation of individual log grades). Sycamore produces the highest proportion of sawtimber volume in grades 1 and 2 (log grade 1 is the highest quality) with 86 percent. Cottonwood ranks second in quality with 76 percent of its volume in these two grades, followed by ash (70 percent), willow (66 percent), black walnut (63 percent), and other hickories (63 percent).

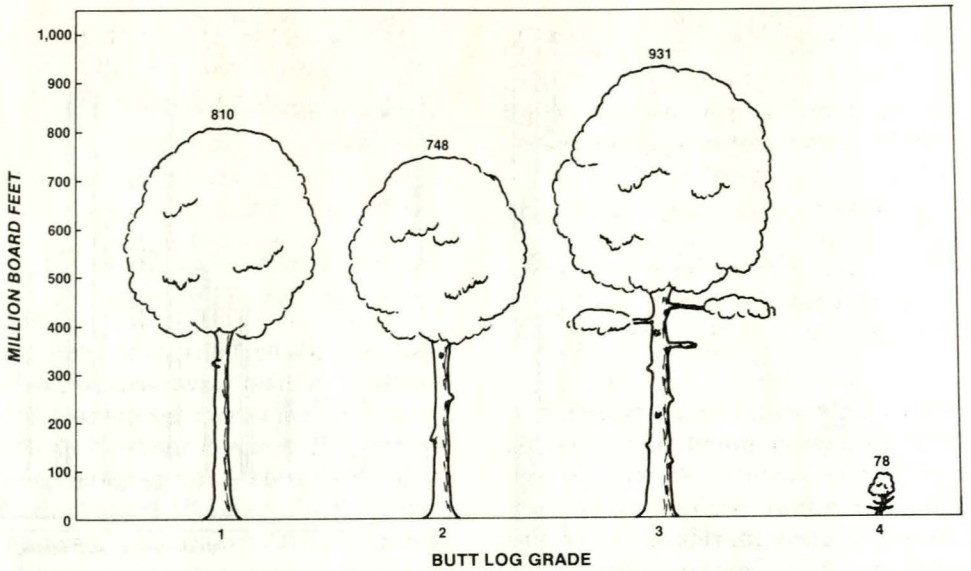

Figure 11.--*Net volume of sawtimber on commercial forest land by butt log grade, Kansas, 1981.*

Black Walnut Volume Increasing

Black walnut deserves special comment because of its exceptionally high value and the extraordinary demand for this fine hardwood. In addition to the 58 million cubic feet of black walnut growing stock in Kansas, there are 5 million cubic feet of short-log cull and 5 million cubic feet of rough and rotten cull black walnut on commercial forest land. Similarly there are 5 million cubic feet of walnut in all tree classes on wooded strips and another 3 million cubic feet of walnut on other nonforest land with trees (table 4).

Table 4.--*Net volume of black walnut by land class and tree class, Kansas, 1981*

(In million cubic feet)

Tree class	Commercial forest	Nonforest with trees	
		Wooded strips	Other
Growing stock	57.8	3.3	2.1
Short-log cull	5.5	0.7	0.6
Rough and rotten cull	5.4	0.5	0.8
All classes	68.7	4.5	3.5

Black walnut sawtimber volume on commercial forest land was 170 million board feet in 1981. The total walnut volume, including that from all tree classes and land classes, is 200 million board feet (see table 64 in Appendix).

The volume of black walnut increased between surveys faster than the hardwood volume average. Walnut growing stock increased 57 percent compared to an increase of 41 percent for all hardwood growing stock, and walnut sawtimber volume gained 57 percent compared to 31 percent for all hardwoods. However, volume of walnut in the larger diameter classes represents a smaller share of total walnut volume than it did in 1965, reflecting the heavy demand for large trees. In 1965, 15 percent of the walnut sawtimber volume was in trees 19 inches in diameter and larger, compared to 54 percent for all species. In 1981, only 12 percent of the walnut sawtimber volume was in trees at least 19 inches d.b.h., compared to 44 percent for all species.

Nonforest Land has Large Volume

In addition to the 711 million cubic feet of growing stock on commercial forest land discussed so far, nonforest land with trees contributes 115 million cubic feet in growing-stock trees, as seen below:

Land use	Volume of growing stock (Million cubic feet)
Wooded strips	91.5
Wooded pasture	23.4
Windbreaks	0.5
Total	115.4

Of this nonforest land, wooded strips have the greatest potential for commercial timber production because they meet the definition of commercial forest land in every way except they are less than 120 feet wide. In addition to growing-stock volume shown

above, wooded strips contain 300 million board feet in sawtimber trees.

Volume on wooded strips is fairly evenly divided between upland and lowland forest types. Cottonwood is the most abundant species on wooded strips (24 million cubic feet), followed by hackberry (13 million), bur oak (11 million), and ash (11 million). Forty-four percent of the growing-stock volume on wooded strips is in the Western Survey Unit, followed by the Northeastern Unit (33 percent), and the Southeastern Unit (23 percent).

In contrast to wooded strips, wooded pasture is primarily used for grazing; and a combination of this use, adverse sites, and poor tree quality preclude this land class from much commercial timber production. Wooded pastures are frequently rangeland or pastures invaded by low-quality trees. Some of these lands classed as wooded pasture may become commercial forest in the future as increased stocking and tree growth bring them into the required stocking to meet commercial forest standards. On the other hand, many others may be cleared of trees through proper range or pasture management.

GROWTH, MORTALITY, REMOVALS, AND BIOMASS

Net Growth Rises Slightly

Net annual growth of growing stock on commercial forest land increased 5 percent between surveys, from 22 million cubic feet in 1964 to 23 million cubic feet in 1980.

The Northeastern Unit accounted for 41 percent of the growth volume, but 44 percent of total growing-stock volume. The Southeastern Unit, however, claimed 42 percent of the growth even though it had 35 percent of growing-stock volume. And the Western Unit, with its somewhat harsher growing conditions and somewhat larger diameter trees, contributed only 17 percent of the growth volume, although it accounted for 21 percent of the growing-stock inventory.

The average cubic foot growth rate in the State in 1980 was 3.3 percent of growing-stock inventory, compared to 4.4 percent in 1964. This means that even though the volume of net growth increased between surveys (5 percent), it did not increase as fast as the growing-stock inventory (42 percent).

Net growth per acre increased from 18.5 cubic feet in 1964 to 19.2 cubic feet in 1980, a 4-percent gain.

The highest average cubic foot growth rate was in the Southeastern Unit (3.9 percent), followed by the Northeastern Unit (3.1 percent), and the Western Unit (2.6 percent).

Among species with the highest cubic foot growth rates are eastern redcedar (10.3 percent), boxelder (7.3 percent), hackberry (5.1 percent), and soft maple (4.5 percent).

Net annual growth of sawtimber in 1980 amounted to 64 million board feet--a growth rate of 2.5 percent of inventory. Sawtimber growth per acre averaged 53.0 board feet.

Net annual growth represents growth and ingrowth less natural mortality. The total volume lost by the death of a large, overmature tree cancels out the growth in many smaller diameter trees of the same species. Therefore, a species with a higher proportion of its trees and volume in the larger diameter classes, those likeliest to die, tends to have a lower net annual growth rate. Cottonwood, for example, has a net annual growing-stock growth rate of 1.9 percent, and a sawtimber growth rate of 1.4 percent--both rates well below average. Approximately half of the cottonwood cubic foot volume is in trees 21 inches in diameter and larger, compared to 19 percent for all other species combined.

Potential Growth Higher than Current Growth

The present net annual growth in Kansas is less than the potential net growth (or productive potential) of the commercial forest land, which cannot be measured accurately. However, we made a rough estimate of it by using site class information collected during the latest inventory. Site class values indicate the annual volume of growth per acre in fully stocked stands undisturbed by man (unmanaged or uncut) at culmination of mean annual increment[5].

By multiplying the area of commercial forest land in each site by the midpoint of the growth range in that class, we estimated potential growth in the State (table 5). This method yields inflated results because most stands in Kansas are neither fully stocked nor undisturbed. In addition, it does not take into account the present distribution of age classes or the obvious differences in growth among them. Spurr and Vaux (1976) discounted an estimate of potential growth for the Nation by 10 percent to arrive at a figure they considered realistic. A study of the aspen type in Wisconsin suggests that potential growth is 52 percent higher than current growth (Lundgren and Hahn 1978).

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[5]*Culmination of mean annual increment is the point at which a curve plotting current annual increment crosses a curve plotting mean annual increment.*

Table 5.--*Estimation of potential net annual growth on commercial forest land, Kansas, 1980*

Site class - cubic feet/acre/ year	Area of commercial forest land	Potential net growth/acre[1]	Total potential net growth
	Thousand acres	*Cu ft/acre/year*	*Thousand cubic feet/year*
120+	2.1	142.0	298.2
85-119	158.9	102.0	16,207.8
50-84	485.5	67.0	32,528.5
20-49	561.4	34.5	19,368.3
Total	1,207.9	--	68,402.8

[1]Midpoint of site class interval.

The undiscounted potential net annual growth for Kansas using the above method is 68.4 million cubic feet or 56.6 cubic feet per acre. If this potential growth is discounted 10 percent, the resulting 61.6 million cubic feet or 51.0 cubic feet per acre is a better estimate, although its accuracy can only be guessed.

This potential growth is not the ultimate growth possible--higher volumes of growth can be attained by applying intensive forest management practices such as thinning, fertilization, and planting or seeding genetically superior stock.

Tree Disease Largest Known Cause of Death

Net annual mortality of growing-stock trees increased from 3.3 million cubic feet in 1964 to 3.8 million in 1980, a 15-percent gain. The mortality rate in 1964 was 0.7 percent of inventory; in 1980 it was 0.5 percent.

The largest volume of mortality was due to "unknown and other" causes, 43 percent of the total (fig. 12). This finding stems from the difficulty experienced by field crews in determining the *primary* cause of death in trees that had been dead for several years. Among the known causes of mortality, disease accounted for the largest volume, 40 percent of the total. Diseases of elm, principally Dutch elm disease, account for nearly six-tenths of the disease-caused mortality.

Mortality of sawtimber amounted to only 12.3 million board feet in 1980--0.5 percent of inventory.

Timber Removals Higher Between Surveys

Timber removals from growing stock increased from 8.3 to 14.0 million cubic feet between surveys, a 68-percent gain. Sawtimber removals jumped even higher, from 30.0 to 53.3 million board feet, a 77-percent increase.

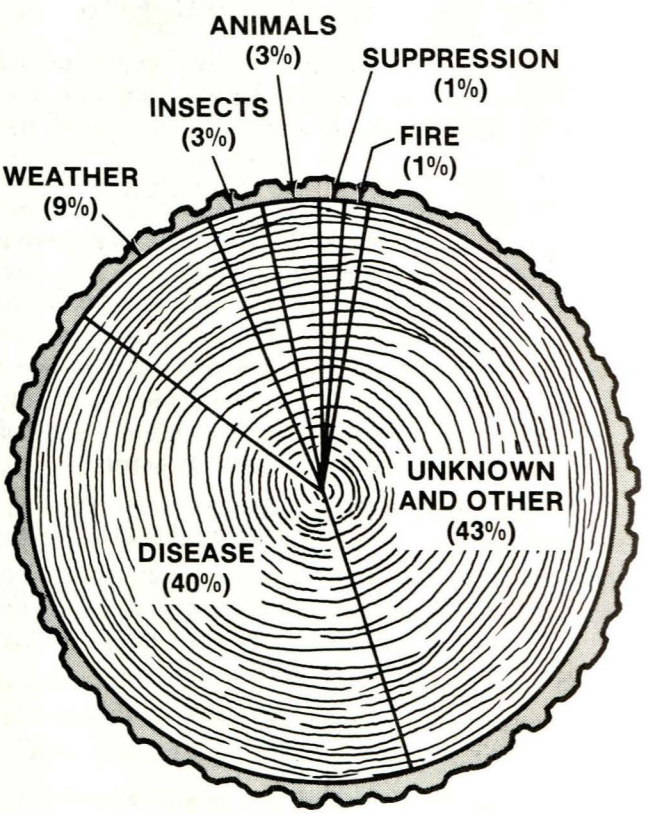

Figure 12.--*Annual mortality of growing stock on commercial forest land by cause of mortality, Kansas, 1980.*

Cottonwood accounted for the largest volume of growing-stock removals in 1980 with 1.9 million cubic feet, compared to 1.1 million cubic feet in 1964, when it represented the second largest volume. In 1964 black walnut led all other species with 1.2 million cubic feet, but by 1980 it had dropped to third place among species, even though its removals volume had increased slightly to 1.3 million cubic feet. Removals of ash were the second largest in 1980 with 1.6 million cubic feet, nearly triple the 1964 removals volume of 0.6 million cubic feet.

The picture is somewhat different for sawtimber removals. Black walnut sawtimber removals in 1980 were 8.3 million board feet--a 14-percent increase from 1964--and second only to cottonwood at 9.2 million board feet. Ash was a distant third in sawtimber removals at 5.5 million board feet. This difference is due to a high proportion of the ash volume being utilized for fuelwood, which allows use of smaller diameter trees. By contrast, virtually all the walnut volume is utilized as saw logs and veneer logs.

The volume of removals increased between surveys for most species, but declined for a few species. Removals of hickory in 1980 were one half the 1964 volume even though the growing-stock inventory more than doubled during this period. The relative scarcity of large diameter hickories is a major factor--only 17 percent of the growing-stock volume of hickory is in trees 15 inches d.b.h. and larger. The removals volumes for soft maple and elm also declined 25 percent and 19 percent, respectively, between surveys. The elm decline came at the same time the inventory of elm growing stock fell to one-third of its 1964 volume.

Eighty-six percent of the growing-stock removals (12.1 million cubic feet) were harvested for roundwood products, primarily fuelwood and saw logs. Other removals--trees removed but not used for products, or trees left standing but "removed" from the commercial forest classification by land use change--amounted to 8 percent of the removals volume (1.1 million cubic feet). Logging residue--unused trees killed by logging or the unused portion of cut trees--accounted for the remaining 6 percent of the removals volume (0.8 million cubic feet).

Fuelwood (7.6 million cubic feet) accounted for 63 percent of the volume of roundwood products from growing stock in 1980, and saw logs (4.3 million cubic feet) accounted for 36 percent. In 1964 the proportion was 35 percent for fuelwood and 45 percent for saw logs.

Ninety percent of the sawtimber removals volume (48.0 million board feet) was harvested for roundwood products. The proportion of sawtimber roundwood products in saw logs did not change much between 1964 (57 percent) and 1980 (55 percent). But the proportion of roundwood products used as fuelwood did shift from 1964 (20 percent) to 1980 (44 percent).

Although the Southeastern Unit contains only 35 percent of the State's growing-stock inventory, it accounted for 45 percent of the total removals volume. The Northeastern Unit accounted for 43 percent of the removals (44 percent of total inventory), and the Western Unit made up only 12 percent of the removals (21 percent of inventory).

Private land supplied virtually all of the removals from growing stock.

Growing-stock Growth Two-thirds Higher Than Timber Removals

One way of appraising the level of removals is to compare it with growth. This is an imperfect method because the volume of growth includes the growth from many trees too small to be part of the volume of removals.

In 1980 growing-stock removals (14.0 million cubic feet) amounted to only 60 percent of the volume of growth (23.2 million cubic feet). Sawtimber removals (53.3 million board feet) were 83 percent of growth (64.0 million board feet). These surpluses of growth over removals create the presently expanding inventory volumes.

Aboveground Biomass Estimated

Interest in whole-tree utilization is increasing as demand for wood fiber increases, as wood as an energy source is further exploited, and as costs of harvesting timber products continue to rise. An estimate of the aboveground weight of live trees and shrubs in Kansas was made as part of the inventory.

The total biomass of all live trees at least 1 inch d.b.h. on commercial forest land in the State amounts to 53.3 million green tons, an average of 44 tons per acre. The largest total biomass is in the oak-hickory forest type with 15.0 million green tons (47 tons per acre), but the greatest biomass density is in the cottonwood type where the 77 tons per acre converts to a total of 5.2 million tons. Among individual species, cottonwood contributes the largest share of biomass (6.8 million green tons), followed by hackberry (5.9 million tons), elm (4.2 million tons), bur oak (4.2 million tons), and ash (4.1 million tons).

The greatest proportion of live-tree biomass is located in growing-stock trees (64 percent). Cull trees

provide 22 percent of the State's biomass, and trees 1 to 5 inches in diameter add the remaining 14 percent:

Biomass component	Weight (Million green tons)
Growing-stock trees	
Boles	22.8
Tops and limbs	11.2
Cull trees	
Boles	7.0
Tops and limbs	4.6
1- to 5-inch trees	7.7
Total	53.3

The biomass of shrubs is greatest in the willow forest type, where these plants average 2,786 pounds per acre green weight, and in the eastern redcedar-hardwood type where they average 2,767 pounds per acre. The upland elm-ash-locust and oak-hickory types produce the next largest shrub biomass amounts, 1,065 and 986 pounds per acre, respectively. Many shrubs are important wildlife food and cover species.

Among the tall shrubs (including live trees less than 1 inch in d.b.h.), roughleaf dogwood produces the greatest average biomass with 269 pounds per acre[6]. American elm was a distant second with 76 pounds per acre, followed by green ash with 74 pounds per acre, hackberry with 38 pounds per acre, and slippery elm with 30 pounds per acre.

Buckbrush predominates among low shrubs with an average biomass of 129 pounds per acre. Poison ivy follows with 8 pounds per acre along with gooseberry-currant with 7 pounds per acre.

Table 6 summarizes the per acre biomass yields for each forest type by vegetation component.

PROJECTIONS

Projections of National Timber Supply

In the most recent projection of national demand for roundwood, annual consumption is estimated to increase from 13.3 billion cubic feet in 1976 to 25.2 billion in 2010, an 89-percent gain (USDA Forest Service 1981). Hardwood demand in the U.S. is projected to jump from 3.0 to 7.5 billion cubic feet during this period--a 150-percent increase. Demand for softwood is projected to be much higher but to increase at a slower rate, from 10.3 to 17.7 billion cubic feet--a 72-percent rise. The faster rate for hardwood demand reflects the expected increase in the use of hardwood roundwood for pulpwood and fuelwood, hardwood lumber for pallets and railroad ties, and hardwood plywood and veneer for furniture. This projection, made at a medium level of population and economic growth, assumes that the price trends in the base period used in making the projection (roughly from the late 1950's through the mid 1970's) continue through the projection period.[7] When the excess of roundwood imports (4.5 billion cubic feet) over exports (1.5 billion) is subtracted from the projected demand in 2010, the result

[6] *A weighted average based on the number of plots sampled for biomass in each forest type and the biomass of each species in the type, including types in which the shrub species was not found.*

[7] *Another projection was made under the assumption that prices will rise enough to maintain an equilibrium between projected demand and supply.*

Table 6.--*Biomass yields on commercial forest land by forest type and vegetation component, Kansas, 1981*

(In pounds per acre green weight)

Forest type	Biomass yields			
	All Components	Tall shrubs	Low shrubs	Live trees
Eastern redcedar-hardwood	44,430	2,707	60	41,663
Oak-hickory	95,903	834	152	94,917
Post-blackjack oak	93,090	200	194	92,696
Upland plains hardwoods	85,179	493	177	84,509
Elm-ash-cottonwood	88,461	582	160	87,719
Cottonwood	153,688	474	126	153,088
Willow	62,400	2,649	137	59,614
Lowland plains hardwoods	97,600	722	183	96,695
Upland elm-ash-locust	47,411	892	173	46,346
Nonstocked	31,484	189	69	31,226

is the annual demand on United States forests--22.2 billion cubic feet.

National roundwood supplies (timber available for harvest) are projected to increase from 12.1 to 18.7 billion cubic feet between 1976 and 2010.[8] Projected demand on United States forests in 2010 exceeds supply by 3.5 billion cubic feet. The short-fall is much larger for softwoods (3.3 billion cubic feet) than for hardwoods (0.2 billion).

Timber Projections for Kansas

Kansas, with its comparatively small timber resource and the primacy of hardwoods, will play a minor role in meeting the Nation's future demand-supply problems, which chiefly concern softwoods. However, the State will continue to be an important supplier of black walnut nationally. To gain perspective on what lies ahead for Kansas, we made several projections of the State's timber resource under different levels of removals.

We made two 30-year projections using the Timber Resource Analysis System (TRAS) program (Alig *et al.* 1982), a computer program for updating, backdating and projecting timber resource information. The first projection assumes a continuation of recent levels of timber removals (low removals option), and the second assumes a higher level of removals (high removals option). Softwoods and hardwoods were grouped together because the volume of softwoods is so small. TRAS uses a stand projection technique involving input of number of trees, growth rates, mortality rates, and removal rates, all by 2-inch diameter classes, along with assumed total removals by year and assumed ingrowth into the 2-inch diameter class.

Assumptions common to both options are: (1) the area of commercial forest land will remain unchanged (some decline is expected, but not enough to affect the results of the projection); (2) radial growth will decline in relation to the increase of basal area per acre of trees; (3) the intensity of forest management will continue at the rate indicated by recent trends; and (4) the volume of "other" removals will drop during the period as more of these trees are utilized for products.

Low Removals Option Projection

The low option assumes that timber removals will increase from 14.0 million cubic feet in 1980 to 25.8 million cubic feet in 2010. Growth is projected to exceed removals throughout the period, to peak about 1999, then to turn down. Growing-stock inventory, then, is projected to increase at an average annual rate of 1.81 percent or 13 million cubic feet (fig. 13). The assumed average annual change in removals used in the projections is shown in the following tabulation:

Period	Low removals option	High removals option
	(Percent annual change)	
1981-1985	0.5	2.3
1986-1990	2.2	3.6
1991-1995	3.1	3.9
1996-2000	2.5	3.7
2001-2005	2.1	3.3
2006-2010	2.0	3.1

Removals in this option increase throughout the period, ending in 2010 84 percent higher than in 1980. Removals for saw logs and fuelwood, the major roundwood products in 1980, are both expected to rise during the projection period, but more of these products will probably be recovered from "other" removals.

Growth is projected to increase from 23.2 million cubic feet in 1980 to 35.2 million cubic feet in 1999, then to turn down to 31.4 million cubic feet in 2010.

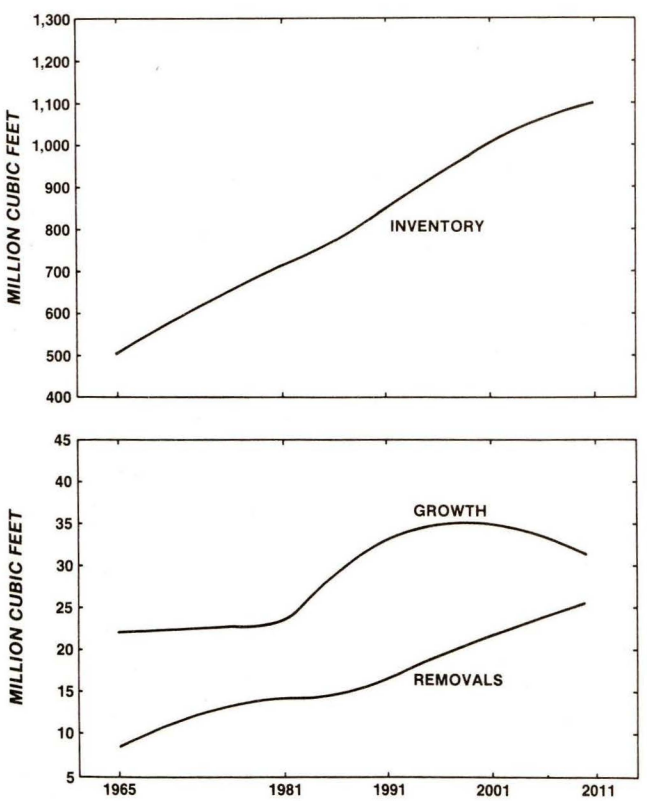

Figure 13.--*Removals, net growth, and inventory of growing stock in Kansas, 1965 and 1981, and low removals option projection for 1982-2011.*

[8]*This projection shows the volume of timber available for harvest from domestic forests if recent trends in the forces determining supply, such as commercial forest area, management levels, and prices, continue through the projection period.*

The surplus of growth over removals was 9.2 million cubic feet in 1980. This surplus is projected to grow to 16.4 million cubic feet in 1992, tapering off to 5.6 million cubic feet in 2010.

Growing-stock inventory is projected to climb during the entire period, but to increase at a slower rate during the last decade. The 1981 inventory of 711.3 million cubic feet is projected to reach 1,098.2 million cubic feet by 2011--a 54-percent gain.

High Removals Option Projection

Removals under this option reflect a higher level of harvesting than the previous option. Timber removals are projected to exceed growth by 2008, and inventory is projected to turn down at that time (fig. 14).

Timber removals jump from 14.0 million cubic feet in 1980 to 37.2 million cubic feet in 2010, a 166-percent gain. Markets for forest products are larger than assumed for the low option.

Net growth is projected to climb from 23.2 million cubic feet in 1980, peak at 35.5 million cubic feet in 2000, then fall off to 34.4 million in 2010. The excess of growth over removals in 1980, 9.2 million cubic feet, is projected to swell to 13.4 million cubic feet in 1990, then to vanish in 2008 when the growth and removals curves intersect. By 2010 the deficit of removals over growth is projected to be 2.8 million cubic feet.

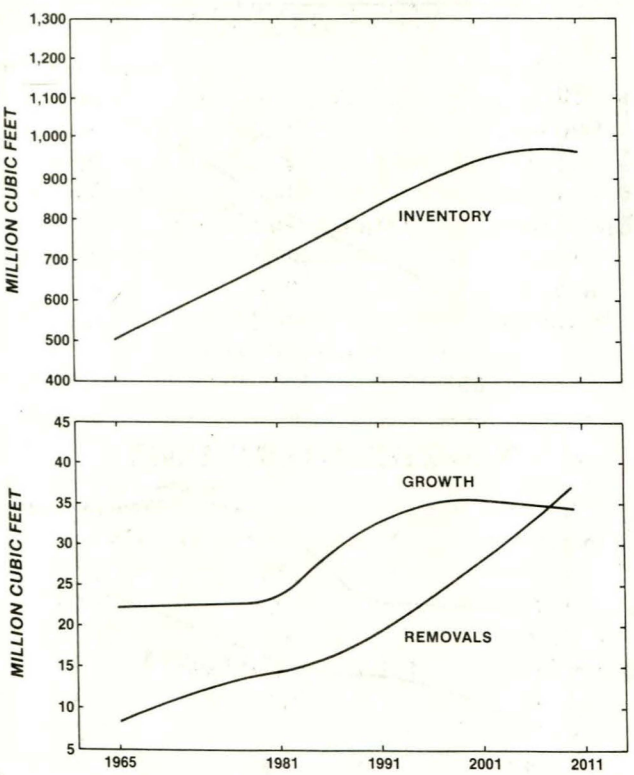

Figure 14.--*Removals, net growth, and inventory of growing stock in Kansas, 1965 and 1981, and high removals option projection for 1982-2011.*

Inventory rises more slowly than for the low option, from 711.3 million cubic feet in 1981 to a peak of 974.0 million cubic feet in 2008. Responding to the deficit of removals over growth beyond 2008, inventory then sags to 969.3 million cubic feet by 2011.

The Outlook

These projections probably represent the bounds within which the actual forest situation will develop. The low and high removals options are valid only to the extent that the assumptions upon which they are based are realized. Projections for the first decade are the most significant because rapidly changing economic, market, and social conditions may invalidate these assumptions and sharply reduce the value of projections for the last two decades.

The projections are not intended to convey desirable goals from silvicultural, social, or economic perspectives. They simply indicate what is likely to happen if forests in the State are managed much as they have been for the past 16 years and if harvesting occurs at a "high" or a "low" level.

Inventory is likely to continue accumulating at a rate close to that of current times, for about two decades, then slow down or decline during the third decade. If timber management efforts are increased beyond that of recent trends, higher growth and larger-than-projected inventories could develop toward the end of the projection period. More complete utilization of residues, tree tops and limbs, the volumes of which are not included in growing-stock inventories, is desirable and would further extend supplies of wood. The rekindled interest in fuelwood as a source of energy suggests that this may be happening. Inventories could be smaller than projected if the area of commercial forest land declines faster than assumed.

The area of the oak-hickory forest type, which surged by 71 percent from its 1965 area to become the largest type in 1981, will probably continue to gain at the expense of the upland plains hardwoods and upland elm-ash-locust types. The rate of increase, however, may slow.

Total output of fuelwood from roundwood nearly quadrupled from 1964 to 1980--from 68,000 cords to 255,000 cords. There is little reason to expect this upward trend to do anything but continue. This increased utilization for fuelwood presents both an opportunity and a threat to improved forest management. If the lower quality trees are taken for fuelwood, a market incentive will be provided to accomplish timber stand improvement to release desirable growing-

stock trees. If, on the other hand, many of the best young growing-stock trees are taken out for fuelwood, the future potential to produce quality saw logs will be greatly reduced. The key is proper landowner understanding and application of sound forest management practices.

Because nonindustrial forest landowners possess 96 percent of the commercial forest area and 94 percent of the growing-stock volume, they obviously control the destiny of the State's forest resource. Improvement in the forest situation will be slow unless many of these independent owners become convinced that timber management is economically attractive. Policies that seek to bring practical technical information and field assistance on timber sale preparation and administration along with forest management will help to bring about more positive change among forest landowners. These owners might also be persuaded by policies that make timber-growing more profitable to them, such as efforts to expand markets for timber products and to increase financial incentives for performing needed management work.

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APPENDIX

Accuracy of Survey

Forest Inventory and Analysis information is based on a sampling procedure designed to provide reliable statistics at the State and Survey Unit levels. Consequently, the reported figures are estimates only. However, a measure of reliability of these figures is given by sampling errors. These sampling errors mean that the chances are two out of three that if a 100-percent inventory had been taken, using the same methods, the results would have been within the limits indicated.

For example, the estimated area of commercial forest land in Kansas in 1981, 1,207.9 thousand acres, has a sampling error of ± 2.45 percent (± 29,594 acres). The commercial forest area from a 100-percent inventory, then, would be expected to fall between 1,237.5 and 1,178.3 thousand acres (1,207.9 ± 29.6), there being a one in three chance that this is not the case.

The following tabulations show sampling errors for State and Survey Unit totals of information collected during the 1981 Kansas Forest Inventory.

STATE TOTALS

Item		Sampling error
Growing stock:	(Million cubic feet)	(Percent)
Volume	711.3	3.52
Growth	23.2	5.61
Removals	14.0	17.00
Sawtimber:	(Million board feet)	
Volume	2,566.2	4.24
Growth	64.0	6.44
Removals	53.3	20.10
	(Thousand acres)	
Commercial forest area	1,207.9	2.45

NORTHEASTERN UNIT

Item		Sampling error
Growing stock:	(Million cubic feet)	(Percent)
Volume	315.1	4.82
Growth	9.7	8.05
Removals	6.0	26.37
Sawtimber:	(Million board feet)	
Volume	1,107.6	5.89
Growth	27.5	9.22
Removals	23.1	32.15
	(Thousand acres)	
Commercial forest area	588.1	3.16

SOUTHEASTERN UNIT

Item		Sampling error
Growing stock:	(Million cubic feet)	(Percent)
Volume	249.1	5.28
Growth	9.7	8.70
Removals	6.3	27.89
Sawtimber:	(Million board feet)	
Volume	828.5	6.39
Growth	27.6	9.86
Removals	24.6	31.82
	(Thousand acres)	
Commercial forest area	437.0	3.89

WESTERN UNIT

Item		Sampling error
Growing stock:	(Million cubic feet)	(Percent)
Volume	147.1	13.27
Growth	3.9	20.30
Removals	1.7	48.20
Sawtimber:	(Million board feet)	
Volume	630.1	14.18
Growth	8.9	17.76
Removals	5.6	46.36
	(Thousand acres)	
Commercial forest area	182.8	8.43

As survey data are broken down into sections smaller than State or Survey Unit totals, the sampling error increases. The smaller the breakdown, the larger the sampling error. For example, the sampling error for area of commercial forest land in a particular county is higher than that for total commercial forest area in the Survey Unit (tables 110-113 show the sampling errors for estimates smaller than State and Survey Unit totals).

SURVEY PROCEDURE

The major steps in the survey of Kansas were as follows:

1. A total of 275,271 1-acre points were systematically distributed across aerial photos of the entire State. Photo interpretors classified these points as forest land (9,570), nonforest land with trees (5,208), nonforest land without trees (258,420), questionable (424), and water (1,649), in order to make a preliminary estimate of forest area. Next, all of the forest points (9,570), 543 of the nonforest with tree points, and all of the questionable points (424) were stereo-classified as to forest type, stand-size class, and density. Then 1,386 points classed as forest, 96 points classed as questionable, and 543 points classed as nonforest with trees were examined on the ground to correct the preliminary area estimate for errors in classification and for actual changes in land use since the photos were taken. At each of the 937 commercial forest locations, variable-radius plots (basal area factor 37.5) were established at 10 points uniformly placed over the sample acre. Of these 937 locations, 222 were plots established during the 1965 survey and remeasured during the 1981 survey to provide improved growth and mortality information. Tree measurements made at commercial forest locations were the basis for estimates of timber volume, growth, mortality, number of trees, and other forest classifications.

2. An estimate of the volume of black walnut on nonforest land was made by establishing 10-point, variable-radius plots on nonforest ground-check locations wherever black walnut trees were found. This included black walnut trees found on fence rows or as scattered trees, but did not include walnut trees in urban areas, lawns, or in other areas where harvest of these trees is unlikely.

3. An estimate of the volume of timber on nonforest wooded strips was made by establishing 10-point, fixed-radius plots on wooded strip ground-check locations. The design and size of these plots were adjusted to allow for the narrowness of the strips.

4. Growth and mortality on commercial forest land were estimated using data collected on both remeasurement plots (those established in 1965 and remeasured in 1981) and new plots established in 1981. Growth was measured on remeasurement plots as the observed change in volume on surviving trees. Growth was estimated on new plots by using growth equations developed during the 1972 Missouri survey. Mortality on remeasurement plots was calculated as the observed volume in trees that died between surveys. On new plots, mortality was estimated by determining the volume in trees that died within 3 years of plot establishment. Growth and mortality were converted to an annual basis.

5. Statistics on timber utilization during 1980 were obtained from mill surveys. State and Extension Forestry, Kansas State University (S&EF) canvassed resident sawmills and other primary wood-using plants. The North Central Forest Experiment Station canvassed out-of-State primary wood-using mills such as sawmills and veneer mills to determine their use of timber from Kansas. State and Extension Forestry made estimates of 1980 fuelwood and post production from roundwood based on the best information available on recent output of these products. Estimates of primary mill residue used for fuelwood were obtained from the canvass of Kansas primary wood-using

plants. Timber cut for products by ownership class was determined by a canvass of public and industrial timber owners. The portion of timber harvest unaccounted for by the latter owners was grouped under "farmer and other owners".

6. Wood utilization factors for converting timber products output to timber removals for saw logs, veneer logs, and cooperage logs were obtained during the 1971-1972 Missouri utilization study. Factors for fuelwood were obtained during the 1964 Kansas utilization study. Factors for all other products were obtained during the 1959-1960 Missouri utilization study.

7. Field data were sent to St. Paul for processing and analysis.

Comparing Kansas' Third Survey with the Second Survey

Data from new forest surveys are often compared with data from earlier ones to determine trends in forest areas and volumes. Changes in procedures and definitions between surveys make it necessary to adjust earlier survey data to make them comparable with data from the new survey.

We adjusted the published 1965 area of commercial forest land, 1,192.4 thousand acres, by subtracting 900 acres that were classed commercial forest in 1965, but were Christmas tree production areas (productive-reserved forest land) in 1981. The adjusted 1965 area (1,191.5 thousand acres) can be compared directly with the 1981 area (1,207.9 thousand acres).

A test was made to ensure that we could move from the adjusted 1965 volumes to the new 1981 volumes by means of Timber Resource Analysis System (TRAS), a Forest Service computer program for updating, backdating, and projecting timber volume, growth, mortality, and removals. TRAS recalculated 1965 volumes using 1981 estimates of cubic foot volume per tree and 1981 board foot-cubic foot ratios. The volumes had to be adjusted so that differences between surveys represented actual change and not merely change in the volume equations used.

LOG GRADE

The butt log of every sawtimber tree on every full permanent sample plot, remeasurement plot, and nonforest plot with black walnut trees (4,194 trees) was graded for quality. Logs were graded on the basis of external characteristics. Hardwood species were graded according to "Hardwood Log Grades for Standard Lumber" (Vaughn *et al.* 1966). The best 12-foot section of the lowest 16-foot hardwood log, or the best 12-foot upper section if the butt log did not meet minimum log-grade standards, was graded as follows:

Forest Service standard grades for hardwood factory saw logs

Grading factors		Specifications							
		Log grade 1			Log grade 2				Log grade 3
Position in tree		Butts only	Butts and uppers		Butts and uppers				Butts and uppers
Scaling diameter, inches		13-15[1]	16-19	20+	11+[2]		12+		8+
Length without trim, feet			10+		10+	8-9	10-11	12+	8+
Required clear cuttings[3] of each of three best faces[4]	Min. length, feet	7	5	3	3	3	3	3	2
	Max. number	2	2	2	2	2	2	3	No Limit
	Min. proportion of log length required in clear cutting	5/6	5/6	5/6	2/3	3/4	2/3	2/3	1/2
Maximum sweep and crook allowance	For logs with less than one-fourth of end in sound defects		15 percent			30 percent			50 percent
	For logs with more than one-fourth of end in sound defects		10 percent			20 percent			35 percent
Maximum scaling deduction			40 percent[5]			50 percent[6]			50 percent

[1]Ash and basswood butts can be 12 inches if they otherwise meet requirements for small #1's.
[2]Ten-inch logs of all species can be #2 if they otherwise meet requirements for small #1's.
[3]A clear cutting is a portion of a face, extending the width of the face, that is free of defects.
[4]A face is one-fourth of the surface of the log as divided lengthwise.
[5]Otherwise #1 logs with 41-60 percent deductions can be #2.
[6]Otherwise #2 logs with 51-60 percent deductions can be #3.

Forest Service standard specifications for hardwood construction logs (tie and timber logs)[1]

Position in tree		Butt and upper
Min. diameter, small end		8 inches +
Min. length, without trim		8 feet
Clear cuttings		No requirements.
Sweep allowance, absolute		One-fourth of the diameter at the small end for each 8 feet of length.
Sound surface defects	Single knots	Any number, if no one knot has an average diameter above the callus in excess of one-third of log diameter at point of occurrence.
	Whorled knots	Any number if sum of knot diameters above the callus does not exceed one-third of log diameters at point of occurrence.
	Holes	Any number provided none has a diameter over one-third of log diameter at point of occurrence, and none extends over 3 inches into included timber.[2]
Unsound surface defects		Same requirements as for sound defects if they extend into included timber.[2] No limit if they do not.
End defects	Sound	No requirements.
	Unsound	None allowed; log must be sound internally, but will admit one shake not to exceed one-fourth of the scaling diameter and will admit a longitudinal split not extending over 5 inches into the contained timber.

[1]These specifications are minimum for the class. If, from a group of logs, factory logs are selected first, thus leaving only nonfactory logs from which to select construction logs, then the quality range of the construction logs so selected is limited, and the class may be considered a grade. If selection for construction logs is given first priority, then it may be necessary to subdivide the class into grades.

[2]Included timber is always square, and dimension is judged from small end.

Softwood species were graded according to the following specifications:

LOG GRADES FOR SOFTWOOD LOGS

Grade 1

1. Logs must be 16 inches or larger, 10 feet or longer, and with deduction for defect not over 30 percent of gross scale.
2. Logs must be at least 75 percent clear on each of three faces.
3. All knots outside clear cutting must be sound and not over 2½ inches in diameter.

Grade 2

1. Logs must be 12 inches or larger, 10 feet or longer, and with a net scale after deduction for defect of at least 50 percent of the gross contents of the log.
2. Logs must be at least 50 percent clear on each of three faces or 75 percent clear on two faces.

Grade 3

1. Logs must be 6 inches or larger, 8 feet or longer, and with a net scale after deduction for defect of at least 50 percent of the gross contents of the log.

Note: A) Diameters are diameter inside bark at small end of log.
B) Percent clear refers to percent clear in one continuous section.

PRINCIPAL TREE AND SHRUB SPECIES GROUPS IN KANSAS[9]

Tree Species

SOFTWOODS
- Eastern redcedar ..... *Juniperus virginiana*

HARDWOODS
- Bur oak ..... *Quercus macrocarpa*
- Select white oaks
  - White oak ..... *Quercus alba*
  - Chinkapin oak ..... *Quercus muehlenbergii*
- Other white oaks
  - Post oak ..... *Quercus stellata*
- Select red oaks
  - Northern red oak ..... *Quercus rubra*
  - Shumard oak ..... *Quercus shumardii*
- Other red oaks
  - Black oak ..... *Quercus velutina*
  - Blackjack oak ..... *Quercus marilandica*
  - Pin oak ..... *Quercus palustris*
  - Shingle oak ..... *Quercus imbricaria*
- Select hickory
  - Shellbark hickory ..... *Carya laciniosa*
  - Mockernut hickory ..... *Carya tomentosa*
  - Shagbark hickory ..... *Carya ovata*
- Other hickory
  - Bitternut hickory ..... *Carya cordiformis*
  - Black hickory ..... *Carya texana*
- Pecan ..... *Carya illinoensis*
- Hard maple
  - Sugar maple ..... *Acer saccharum*
- Soft maple
  - Silver maple ..... *Acer saccharinum*
- Ash
  - Green ash ..... *Fraxinus pennsylvanica*
  - White ash ..... *Fraxinus americana*
- Cottonwood
  - Eastern cottonwood ..... *Populus deltoides*
- Basswood
  - American basswood ..... *Tilia americana*
- Elm
  - American elm ..... *Ulmus americana*
  - Siberian elm ..... *Ulmus pumila*
  - Slippery elm ..... *Ulmus rubra*
- Black walnut ..... *Juglans nigra*
- Willow
  - Black willow ..... *Salix nigra*
- Boxelder ..... *Acer negundo*
- Hackberry ..... *Celtis occidentalis*
- Sycamore ..... *Platanus occidentalis*
- Other hardwoods
  - Black cherry ..... *Prunus serotina*
  - Black locust ..... *Robinia pseudoacacia*
  - Honeylocust ..... *Gleditsia triacanthos*
  - Kentucky coffeetree ..... *Gymnocladus dioicus*
  - Northern catalpa ..... *Catalpa speciosa*
  - Common persimmon ..... *Diospyros virginiana*
  - Red mulberry ..... *Morus rubra*
  - River birch ..... *Betula nigra*
  - Sugarberry ..... *Celtis laevigata*
- Noncommercial species
  - Texas buckeye ..... *Aesculus glabra* var. *arguta*
  - Ailanthus ..... *Ailanthus altissima*
  - Eastern redbud ..... *Cercis canadensis*
  - Hawthorn ..... *Crataegus* spp.
  - Osage-orange ..... *Maclura pomifera*
  - Eastern hophornbeam ..... *Ostrya virginiana*

SHRUB SPECIES

TALL SHRUBS
- Roughleaf dogwood ..... *Cornus drummondii*
- Chokecherry ..... *Prunus virginiana*
- Wild plum ..... *Prunus* spp.
- Pawpaw ..... *Asimina triloba*
- Beaked hazel ..... *Corylus cornuta*
- Prickly ash ..... *Xanthoxylum americanum*
- Viburnum ..... *Viburnum* spp.
- Elder ..... *Sambucus* spp.
- Sumac ..... *Rhus* spp.
- Buttonbush ..... *Cephalanthus occidentalis*

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[9]*The common and scientific names of tree species are based on: Little, Elbert L., Jr. 1979. The common and scientific names of shrubs are based on: Fernald, Merritt L. 1950.*

Wahoo ..... *Euonymus atropurpureus*
Willow ..... *Salix* spp.
Sassafras ..... *Sassafras albidum*

LOW SHRUBS

Virginia creeper ..... *Parthenocissus* spp.
Gooseberry-currant ..... *Ribes* spp.
Raspberry-blueberry ..... *Rubus* spp.
Rose ..... *Rosa* spp.
American bladdernut ..... *Staphylea trifolia*
Bilberry-blackberry ..... *Vaccinium* spp.
Honeysuckle ..... *Lonicera* spp.
Buckbrush ..... *Symphoricarpos* spp.
Poison ivy ..... *Rhus radicans*
Pipe-vine ..... *Aristolochia tomentosa*
Moonseed ..... *Menispermum canadense*
Greenbrier ..... *Smilax* spp.
Grape ..... *Vitis* spp.

METRIC EQUIVALENTS OF UNITS USED IN THIS REPORT

1 acre = 4,046.86 square meters or 0.405 hectare.
1,000 acres = 405 hectares.
Breast height = 1.4 meters above the ground.
1 cubic foot = 0.0283 cubic meter.
1 foot = 30.48 centimeters or 0.3048 meter.
1 inch = 25.4 millimeters, 2.54 centimeters, or 0.0254 meter.
1 pound = 0.454 kilogram.
1 ton = 0.907 metric ton.

DEFINITION OF TERMS

Acceptable trees.--Growing-stock trees of commercial species that meet specified standards of size and quality, but do not qualify as desirable trees.

Area-condition classes.--*Class 10.*--Areas fully stocked with desirable trees but not overstocked.

Class 20.--Areas fully stocked with desirable trees, but overstocked with all live trees.

Class 30.--Areas medium to fully stocked with desirable trees, and with less than 30 percent of the area controlled by other trees and/or inhibiting vegetation or surface conditions that will prevent occupancy by desirable trees.

Class 40.--Areas medium to fully stocked with desirable trees and with 30 percent or more of the area controlled by other trees and/or conditions that ordinarily prevent occupancy by desirable trees.

Class 50.--Areas poorly stocked with desirable trees, but fully stocked with growing-stock trees.

Class 60.--Areas poorly stocked with desirable trees, but with medium to full stocking of growing-stock trees.

Class 70.--Areas poorly stocked with desirable trees, and poorly stocked with growing-stock trees.

Basal area.--The area in square feet of the cross section at breast height of a single tree. When the basal areas of all trees in a stand are summed, the result is usually expressed as square feet of basal area per acre.

Biomass.--The aboveground volume of all live trees (including bark and foliage). Biomass is made up of 5 components:

Growing-stock bole.--Biomass of a growing-stock tree from a 1-foot stump to a 4-inch top.

Growing-stock tops and limbs.--Biomass of a growing-stock tree from a 1-foot stump minus the growing-stock bole.

Cull bole.--Biomass of a cull tree from a 1-foot stump to a variable 4-inch top.

Cull tops and limbs.--Biomass of a cull tree from a 1-inch stump minus the cull bole.

1- to 5-inch trees.--Biomass of all live trees 1 to 5 inches in diameter at breast height.

Commercial forest land.--Forest land producing or capable of producing crops of industrial wood and not withdrawn from timber utilization (Note: Areas qualifying as commercial forest land can produce more than 20 cubic feet per acre per year of annual growth under management. Currently inaccessible and inoperable areas are included, except when the areas involved are small and unlikely to become suitable for production of industrial wood in the foreseeable future.) Also see definition of pastured commercial forest land.

Commercial species.--Tree species presently or prospectively suitable for industrial wood products. (Note: Excludes species of typically small size, poor form, or inferior quality such as hophornbeam and hawthorn.)

County and municipal land.--Land owned by counties and local public agencies or municipalities, or land leased to these governmental units for 50 years or more.

Cropland.--Land under cultivation within the past 24 months, including cropland harvested, crop failures, cultivated summer fallow, idle cropland used only for pasture, orchards, and land in soil improvement crops, but excluding land cultivated in developing improved pasture.

Cull.--Portions of a tree that are unusable for industrial wood products, because of rot, form, or other defect.

Desirable trees.--Growing-stock trees having no serious defects in quality limiting present or prospective use, and of relatively high vigor, and containing no pathogens that may result in death or serious deterioration before rotation age. These are trees that would be favored by forest managers in silvicultural operations.

Diameter classes.--A classification of trees based on diameter outside bark, measured at breast height (4½ feet above the ground). (Note: d.b.h. is the com-

mon abbreviation for diameter at breast height. Two-inch diameter classes are commonly used in Forest Survey, with the even inch the approximate midpoint for a class. For example, the 6-inch class includes trees 5.0 through 6.9 inches d.b.h. inclusive.)

Farm.--Any place from which $1,000 or more of agricultural products were produced and sold during the year.

Farmer-owned land.--Land owned by operators of farms. (Note: Excludes land leased by farm operators from nonfarm owners, such as railroad companies and States.)

Forest land.--Land at least 16.7 percent stocked by forest trees of any size, or formerly having had such tree cover, and not currently developed for nonforest use. (Note: Stocking is measured by comparison of basal area and/or number of trees, by age or size and spacing with specified standards.) The minimum area for classification of forest land is 1 acre. Roadside, streamside, and shelterbelt strips of timber must have a crown width at least 120 feet to qualify as forest land. Unimproved roads and trails, streams, or other bodies of water or clearings in forest areas shall be classed as forest if less than 120 feet wide. Also see definitions of land area, commercial forest land, noncommercial forest land, productive-reserved forest land, stocking, unproductive forest land, nonforest land, and water.

Forest industry land.--Land owned by companies or individuals operating primary wood-using plants.

Forest trees.--Woody plants having a well-developed stem and usually more than 12 feet in height at maturity.

Forest types.--A classification of forest land based upon the species forming a plurality of live tree stocking. Major forest types in Kansas are:

Eastern redcedar-hardwood.--Forests in which hardwoods comprise a plurality of the stocking but in which eastern redcedar comprises 25 percent or more of the stocking. Found on dry uplands, usually abandoned pastures or fields.

Oak-hickory.--Forests in which upland oaks (white, northern red, black) or hickory, singly or in combination, comprise a plurality of the stocking, except for stands classed as eastern redcedar-hardwood or as post-blackjack oak. Occurs on a variety of soils.

Post-blackjack oak.--Forests in which post oak or blackjack oak, singly or in combination, comprise a majority of the stocking. Occurs on dry uplands and ridges.

Upland plains hardwoods.--Forests in which black walnut, hackberry, and bur oak, singly or in combination, comprise a plurality of the stocking. Commonly found on slopes and uplands.

Elm-ash-cottonwood.--Lowland forest in which elm, ash, cottonwood, and willow, singly or in combination, comprise a plurality of the stocking, except for those in which cottonwood or willow comprise a majority of the stocking. Found on first or second bottoms of major streams.

Cottonwood.--Forests in which cottonwood comprises a majority of the stocking.

Willow.--Forests in which willow comprises a majority of the stocking.

Lowland plains hardwoods.--Forests in which black walnut, hackberry, bur oak, soft maple, and boxelder, singly or in combination, comprise a plurality of the stocking. Commonly found in coves and bottomlands.

Upland elm-ash-locust.--Upland forests in which elm, ash, and honeylocust, singly or in combination, comprise a plurality of the stocking. Includes shelterbelts and windbreaks on sites drier than those commonly associated with lowland species.

Gross area.--The entire area of land and water as determined by the Bureau of the Census, 1980.

Growing-stock trees.--Live trees of commercial species qualifying as desirable and acceptable trees. (Note: Excludes rough, rotten, and dead trees.)

Growing-stock volume.--Net volume in cubic feet of growing-stock trees 5 inches d.b.h. and over, from a 1-foot stump to a minimum 4 inch top diameter outside bark of the central stem, or to the point where the central stem breaks into limbs. Cubic feet can be converted to cords by dividing by 79 cubic feet per solid wood cord.

Hardwoods.--Dicotyledonous trees, usually broad-leaved and deciduous.

Idle farmland.--Includes former croplands, orchards, improved pastures, and farm sites not tended within the past 2 years and presently less than 16.7 percent stocked with trees.

Improved pasture.--Land currently improved for grazing by cultivation, seeding, irrigation, or clearing of trees or brush, and less than 16.7 percent stocked with live trees.

Indian land.--All lands held in trust by the United States for individual Indians or tribes, or all lands, titles to which are held by individual Indians or tribes, subject to Federal restrictions against alienation.

Industrial wood.--All roundwood products, except fuelwood.

Land area.--*A. Bureau of the Census.* The area of dry land and land temporarily or partly covered by water, such as marshes, swamps, and river flood plains (omitting tidal flats below mean high tide); streams, sloughs, estuaries, and canals less than 1/8 of a statute mile wide; and lakes, reservoirs, and ponds less than 40 acres in area.

B. *Forest Inventory and Analysis.* The same as the Bureau of the Census, except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc. is 1 acre.

Live trees.--Growing-stock, rough and rotten trees 1 inch d.b.h. and larger.

Log grades.--A classification of logs based on external characteristics as indicators of quality or value. (See Appendix for specific grading factors used.)

Logging residues.--The unused growing-stock portions of trees cut or killed by logging.

Maintained road.--Any road, hard-topped or other surface, that is plowed or graded at least once a year. Includes rights-of-way that are cut or treated to limit herbaceous growth.

Marsh.--Nonforest land that characteristically supports low, generally herbaceous or shrubby vegetation and that is intermittently covered with water.

Merchantable.--Refers to a pulpwood or saw log section that meets pulpwood or saw log specifications, respectively.

Miscellaneous federal land.--Federal land other than National Forest, primarily land administered by the Bureau of Land Management.

Miscellaneous private land.--Privately owned land other than forest industry and farmer-owned land.

Mortality.--The volume of sound wood in growing-stock and sawtimber trees that die annually.

National forest land.--Federal land that has been legally designated as National Forests or purchase units, and other land under the administration of the USDA Forest Service.

Net annual growth of growing-stock.--The annual change in volume of sound wood in live sawtimber and poletimber trees and the total volume of trees entering these classes through ingrowth, less volume losses resulting from natural causes.

Net annual growth of sawtimber.--The annual change in the volume of live sawtimber trees and the total volume of trees reaching sawtimber size, less volume losses resulting from natural causes.

Net volume.--Gross volume less deductions for rot, sweep, or other defect affecting use for timber products.

Noncommercial forest land.--(a) Unproductive forest land and (b) productive-reserved forest land. See definitions of unproductive and productive-reserved forest land.

Noncommercial species.--Tree species of typically small size, poor form, or inferior quality that normally do not develop into trees suitable for industrial wood products.

Nonforest land.--Land that has never supported forests, and land formerly forested where use for timber management is precluded by development for other uses. (Note: Includes areas used for crops, improved pasture, residential areas, city parks, improved roads of any width and adjoining clearings, powerline clearings of any width, and 1- to 40-acre areas of water classified by the Bureau of the Census as land. If intermingled in forest areas, unimproved roads and nonforest strips must be more than 120 feet wide and more than 1 acre in size to qualify as nonforest land.)

a. *Nonforest land without trees.*--Nonforest land with no live trees present.

b. *Nonforest land with trees.*--Nonforest land with one or more trees at least 5 inches in d.b.h. per acre.

Nonstocked land.--Commercial forest land less than 16.7 percent stocked with growing-stock trees.

Other removals.--Growing-stock trees removed but not utilized for products, or trees left standing but "removed" from the commercial forest land classification by land use change. Examples are removals from cultural operations such as timber stand improvement work, land clearing, and changes in land use.

Ownership.--Property owned by one owner, regardless of the number of parcels in a specified area.

Ownership size class.--The amount of commercial forest land owned by one owner, regardless of the number of parcels.

Owner tenure.--The length of time a property has been held by the owner.

Pasture and range.--Land currently improved for grazing by cultivation, seeding, or irrigation plus land on which the natural plant cover is composed principally of native grasses, forbs, or shrubs valuable for forage.

Pastured commercial forest land.--Commercial forest land for which the primary use is wood production, but presently used for grazing.

Physiographic class.--A measure of soil and water conditions that affect tree growth on a site. Physiographic classes used in Forest Inventory and Analysis inventories are:

Xeric sites.--Very dry droughty sites where excessive drainage seriously limits both growth and species occurrence. These sites are usually on upland and upper half slopes.

Xeromesic sites.--Moderately dry soils where excessive drainage limits growth and species occurrence to some extent. These sites are usually on the lower half slope.

Mesic sites.--Deep, well-drained soils. Growth and species occurrence are limited only by climate. These include all cove sites and bottomlands along intermittent streams.

Hydromesic sites.--Moderately wet soils where insufficient drainage or infrequent flooding limits growth and species occurrence to some extent.

These include first and second bottoms on all major creeks and rivers.

Hydric sites.--Very wet sites where excess water seriously limits both growth and species occurrence.

Plant byproducts.--Plant residues used for products such as mulch, pulp chips, and fuelwood.

Plant residues.--Wood and bark materials generated at manufacturing plants during production of other products.

Poletimber stands.--(See stand-size class.)

Poletimber trees.--Growing-stock trees of commercial species at least 5 inches in d.b.h., but smaller than sawtimber size.

Productive-reserved forest land.--Forest land sufficiently productive to qualify as commercial forest land, but withdrawn from timber utilization through statute, administrative regulation, designation, or exclusive use for Christmas-tree production, as indicated by annual shearing.

Rotten trees.--Live trees of commercial species that do not contain at least one 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, because they do not meet Regional specifications for freedom from defect primarily because of rot; that is, when more than 50 percent of the cull volume in a tree is rotten.

Rough trees.--(a) Live trees of commercial species that do not contain at least one merchantable 12-foot saw log or two saw logs 8 feet or longer, now or prospectively, because they do not meet Regional specifications for freedom from defect primarily because of roughness or poor form, and (b) all live trees of noncommercial species.

Roundwood products.--Logs, bolts, or other round sections (including chips from roundwood) cut from trees for industrial or consumer uses. (Note: Includes saw logs; veneer logs and bolts; cooperage logs and bolts; pulpwood; fuelwood; piling; poles; posts; hewn ties; mine timbers; and various other round; split; or hewn products.)

Salvable dead trees.--Standing or down dead trees that are considered merchantable by Regional standards.

Saplings.--Live trees 1 inch to 5 inches in d.b.h.

Sapling-seedling stands.--(See stand-size class.)

Saw log.--A log meeting minimum standards of diameter, length, and defect, including logs at least 8 feet long, sound and straight and with a minimum diameter outside bark (d.o.b.) for softwoods of 7 inches (9 inches for hardwoods) or other combinations of size and defect specified by Regional standards.

Saw log portion.--That part of the bole of sawtimber trees between the stump and the saw log top.

Saw log top.--The point on the bole of sawtimber trees above which a saw log cannot be produced. The minimum saw log top is 7 inches d.o.b. for softwoods and 9 inches d.o.b. for hardwoods.

Sawtimber stands.--(See stand-size class.)

Sawtimber trees.--Growing-stock trees of commercial species containing at least a 12-foot saw log or two noncontiguous saw logs 8 feet or longer, and meeting Regional specifications for freedom from defect. Softwoods must be at least 9 inches in d.b.h. Hardwoods must be at least 11 inches in d.b.h.

Sawtimber volume.--Net volume of the saw log portion of live sawtimber in board feet, International ¼-inch rule, from stump to a minimum 7 inches top d.o.b. for softwoods and a minimum 9 inches top d.o.b. for hardwoods.

Seedlings.--Live trees less than 1 inch in d.b.h. that are expected to survive. Only softwood seedlings more than 6 inches tall and hardwood seedlings more than 1 foot tall are counted.

Short-log (rough tree).--Live trees of commercial species that contain one merchantable 8- to 11-foot saw log but not a 12-foot saw log or two noncontiguous 8- to 11-foot saw logs, now or prospectively.

Shrub.--A woody, perennial plant differing from a perennial herb in its persistent and woody stem(s), and less definitely from a tree in its lower stature and/or the general absence of a well-defined main stem. For this report shrubs were separated somewhat arbitrarily into tall and low shrubs as follows:

Tall shrubs.--Shrubs normally taller than 1.6 to 3.2 feet (0.5 to 1.0 meter).

Low shrubs.--Shrubs normally shorter than 1.6 to 3.2 feet (0.5 to 1.0 meter). (Woody perennial vines, such as grape, were included with low shrubs.)

Shrub biomass.--The total above-ground volume (including the bark) of selected shrubs and trees less than 1-inch d.b.h.

Site classes.--A classification of forest land in terms of inherent capacity to grow crops of industrial wood based on fully stocked natural stands.

Site index.--An expression of forest site quality based on the height of a free-growing dominant or codominant tree of a representative species in the forest type at age 50.

Softwoods.--Coniferous trees, usually evergreen, having needles or scale-like leaves.

Stand.--A growth of trees on a minimum of 1 acre of forest land stocked by forest trees of any size.

Stand-age class.--Age of the main stand. Main stand refers to trees of the dominant forest type and stand-size class.

Stand-area class.--The extent of a continuous forested area of the same forest type, stand-size class, and stand-density class.

Stand-size class.--A classification of forest land based on the size class of growing-stock trees on the area; that is, sawtimber, poletimber, or seedlings and

saplings.

a. *Sawtimber stands.*--Stands at least 16.7 percent stocked with growing-stock trees, with half or more of total stocking in sawtimber or poletimber trees, and with sawtimber stocking at least equal to poletimber stocking.

b. *Poletimber stands.*--Stands at least 16.7 percent stocked with growing-stock trees of which half or more of this stocking is in poletimber and/or sawtimber trees, and with poletimber stocking exceeding that of sawtimber.

c. *Sapling-seedling stands.*--Stands at least 16.7 percent stocked with growing-stock trees of which more than half of the stocking is saplings and/or seedlings.

d. *Nonstocked stands.*--Stands in which stocking of growing-stock trees is less than 16.7 percent.

State land.--Land owned by States, or land leased to these governmental units for 50 years or more.

Stocking.--The degree of occupancy of land by trees, measured by basal area and/or the number of trees in a stand by size or age and spacing, compared to the basal area and/or number of trees required to fully utilize the growth potential of the land; that is, the stocking standard.

A stocking percent of 100 indicates full utilization of the site and is equivalent to 80 square feet of basal area per acre in trees 5 inches d.b.h. and larger. In a stand of trees less than 5 inches d.b.h., a stocking percent of 100 would indicate that the present number of trees is sufficient to produce 80 square feet of basal area per acre when the trees reach 5 inches d.b.h.

Stands are grouped into the following stocking classes:

Overstocked stands.--Stands in which stocking of trees is 134.0 percent or more.

Fully stocked stands.--Stands in which stocking of trees is from 101.0 to 133.9 percent.

Medium stocked stands.--Stands in which stocking of trees is from 61.0 to 100.9 percent.

Poorly stocked stands.--Stands in which stocking of trees is from 16.7 to 60.9 percent.

Nonstocked areas.--Commercial forest land on which stocking of trees is less than 16.7 percent.

Timber removals from growing stock.--The volume of sound wood in growing-stock trees removed annually for forest products (including roundwood products and logging residues) and for other removals.

Timber removals from sawtimber.--The net board-foot volume of live sawtimber trees removed for forest products annually (including roundwood products and logging residues) and for other removals.

Timber products output.--All timber products cut from roundwood and byproducts of wood manufacturing plants. Roundwood products include logs, bolts, or other round sections cut from growing-stock trees, cull trees, salvable dead trees, trees on nonforest land, noncommercial species, sapling-size trees, and limbwood. Byproducts from primary manufacturing plants include slabs, edging, trimmings, miscuts, sawdust, shavings, veneer cores and clippings, and screenings of pulpmills that are used as pulpwood chips or other products.

Tree biomass.--The total aboveground volume (including the bark) of all trees 1 to 5 inches in d.b.h., and the total aboveground volume (including the bark) from a 1-foot stump for trees more than 5 inches in d.b.h.

Tree size class.--A classification of trees based on diameter at breast height, including sawtimber trees, poletimber trees, saplings, and seedlings.

Unproductive forest land.--Forest land incapable of producing 20 cubic feet per acre of annual growth or of yielding crops of industrial wood under natural conditions because of adverse site conditions. (Note: Adverse conditions include shallow soils, dry climate, poor drainage, high elevation, steepness, and rockiness.)

Upper stem portion.--That part of the bole of sawtimber trees above the saw log top to a minimum top diameter of 4 inches outside bark or to the point where the central stem breaks into limbs.

Urban and other areas.--Areas within the legal boundaries of cities, and towns; suburban areas developed for residential, industrial, or recreational purposes; schoolyards; cemeteries; roads, railroads, airports; beaches; powerlines; and other rights-of-way; or other nonforest land not included in any other specified land use class.

Water.--(a) *Bureau of the Census.* — Streams, sloughs, estuaries, and canals more than one-eighth of a statute mile wide, and lakes, reservoirs, and ponds more than 40 acres in area.

(b) *Noncensus.*--The same as the Bureau of the Census, except minimum width of streams, etc. is 120 feet and minimum size of lakes, etc. is 1 acre.

Windbreak.--A group of trees less than 120 feet wide used for the protection of soil, cropfields, and buildings in use.

Wooded pasture.--Improved pasture with more than 16.7 percent stocking in live trees, but less than 25 percent stocking in growing-stock trees. Area is currently improved for grazing or there is other evidence of grazing. (Nonforest land with trees).

Wooded strip.--An acre or more of natural continuous forest land that would otherwise meet survey standards for commercial forest land except that it is less than 120 feet wide. (Nonforest land with trees).

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Table 7.--Area of land by land class, Kansas, 1965 and 1981

(In thousand acres)

Land class	1965[1/]	1981
Forest land		
Commercial forest land		
Eastern redcedar-hardwood	2.7	27.5
Oak-hickory	185.3	316.6
Post-blackjack oak	27.3	30.9
Upland plains hardwoods	113.1	49.4
Elm-ash-cottonwood	192.9	289.6
Cottonwood	65.0	68.1
Willow	8.7	4.2
Lowland plains hardwoods	220.7	265.9
Upland elm-ash-locust	228.6	110.3
Nonstocked	147.2	45.4
Subtotal	1,191.5	1,207.9
Noncommercial forest land		
Unproductive	157.4	128.4
Productive-reserved	0.9	22.4
Subtotal	158.3	150.8
Total	1,349.8	1,358.7
Nonforest land	51,160.9	50,979.3
All land	52,510.7	52,338.0

[1/] Figures have been adjusted from those published after the 1965 survey to conform to 1981 areas because of changes in survey definitions and procedures.

Table 8.--Area of land by land class and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Land class	All units	Forest Survey Unit: North-eastern unit	South-eastern unit	Western unit
FOREST LAND				
Commercial forest land				
Unpastured commercial forest	825.1	401.4	284.5	139.2
Pastured commercial forest[1]	382.8	186.7	152.5	43.6
Subtotal	1,207.9	588.1	437.0	182.8
Noncommercial forest land				
Unproductive	128.4	21.0	97.0	10.4
Productive-reserved	22.4	15.1	2.3	5.0
Subtotal	150.8	36.1	99.3	15.4
Total	1,358.7	624.2	536.3	198.2
NONFOREST LAND				
Nonforest with trees				
Cropland	63.0	30.2	13.6	19.2
Improved pasture[2]	533.6	139.4	225.2	169.0
Wooded strips[3]	150.0	62.6	50.3	37.1
Idle farmland	23.9	4.1	2.5	17.3
Marsh	22.7	4.2	4.3	14.2
Windbreaks[4]	186.3	43.0	66.9	76.4
Wooded pasture[2]	209.8	60.5	95.2	54.1
Subtotal	1,189.3	344.0	458.0	387.3
Nonforest without trees				
Cropland	32,163.2	5,026.1	3,850.3	23,286.8
Improved pasture[2]	15,827.4	1,922.7	4,549.0	9,355.7
Idle farmland	7.5	2.9	4.6	0
Marsh	56.3	1.5	6.9	47.9
Other farm-farmstead	198.9	67.0	35.4	96.5
Urban and other	1,417.9	374.3	338.5	705.1
Noncensus water	118.8	32.2	34.3	52.3
Subtotal	49,790.0	7,426.7	8,819.0	33,544.3
Total	50,979.3	7,770.7	9,277.0	33,931.6
TOTAL LAND[5]	52,338.0	8,394.9	9,813.3	34,129.8
WATER (BUREAU OF THE CENSUS)[5]	319.5	155.9	77.5	86.1
TOTAL LAND AND WATER[5]	52,657.5	8,550.8	9,890.8	34,215.9

[1] Forest land for which the primary use is wood production, but is used for grazing.

[2] Includes areas classified as range by the USDA Soil Conservation Service.

[3] An acre or more of natural continuous forest land less than 120 feet wide that would otherwise meet survey standards.

[4] A group of trees less than 120 feet wide used for the protection of soil, cropfields, and buildings in use.

[5] U.S. Department of Commerce, Bureau of the Census. 1980. State/county area measurement reports (unpublished).

Table 9.--Area of land and forest land by county, Kansas, 1981

County	Land area[1/]	Forest land				Nonforest land with trees			
		All forest	Non-commercial	Commercial	Percent commercial forest	All nonforest with trees	Wooded strips	Other nonforest with trees	Percent nonforest with trees
	Thousand acres				Percent	Thousand acres			Percent
NORTHEASTERN UNIT									
Atchison	275.7	24.8	1.0	23.8	8.6	8.3	1.8	6.5	3.0
Brown	365.8	19.7	1.0	18.7	5.1	9.5	1.3	8.2	2.6
Clay	404.2	16.0	0.7	15.3	3.8	5.0	0.9	4.1	1.2
Dickinson	545.4	14.0	0.5	13.5	2.5	7.0	1.2	5.8	1.3
Doniphan	248.0	29.9	1.2	28.7	11.6	12.9	1.9	11.0	5.2
Douglas	294.9	30.0	1.9	28.1	9.5	20.5	2.5	18.0	7.0
Franklin	369.4	27.3	1.6	25.7	7.0	14.6	2.5	12.1	4.0
Geary	241.2	21.1	2.5	18.6	7.7	9.5	1.5	8.0	3.9
Jackson	420.9	33.5	1.1	32.4	7.7	24.2	6.4	17.8	5.7
Jefferson	342.6	43.5	2.5	41.0	12.0	22.6	3.0	19.6	6.6
Johnson	305.9	27.4	1.4	26.0	8.5	13.7	2.1	11.6	4.5
Leavenworth	296.0	45.8	2.5	43.3	14.6	23.2	5.9	17.3	7.8
Marshall	561.7	31.5	1.8	29.7	5.3	30.4	4.0	26.4	5.4
Miami	377.5	47.9	1.6	46.3	12.3	23.0	5.2	17.8	6.1
Nemaha	459.9	16.9	0.6	16.3	3.5	7.3	1.8	5.5	1.6
Osage	444.7	34.4	3.2	31.2	7.0	21.1	3.4	17.7	4.7
Pottawatomie	529.8	44.4	3.5	40.9	7.7	20.4	3.7	16.7	3.9
Riley	379.6	35.0	2.8	32.2	8.5	20.1	2.2	17.9	5.3
Shawnee	351.2	26.9	1.3	25.6	7.3	14.8	2.2	12.6	4.2
Wabaunsee	510.1	31.8	2.5	29.3	5.7	15.7	3.2	12.5	3.1
Washington	575.0	14.8	0.5	14.3	2.5	18.4	5.4	13.0	3.2
Wyandotte	95.4	7.6	0.4	7.2	7.5	1.8	0.5	1.3	1.9
All counties	8,394.9	624.2	36.1	588.1	7.0	344.0	62.6	281.4	4.1
SOUTHEASTERN UNIT									
Allen	323.3	11.4	1.4	10.0	3.1	17.3	2.2	15.1	5.4
Anderson	373.5	19.5	3.9	15.6	4.2	18.9	2.1	16.8	5.1
Bourbon	408.4	43.4	8.3	35.1	8.6	48.1	2.0	46.1	11.8
Butler	923.7	24.1	2.9	21.2	2.3	36.4	6.5	29.9	3.9
Chase	497.2	10.5	0.6	9.9	2.0	14.4	2.1	12.3	2.9
Chautauqua	412.0	67.8	19.3	48.5	11.8	29.3	3.0	26.3	7.1
Cherokee	377.9	27.0	5.0	22.0	5.8	27.1	2.8	24.3	7.2
Coffey	393.6	12.5	2.5	10.0	2.5	13.8	0.9	12.9	3.5
Cowley	721.7	28.1	2.8	25.3	3.5	14.4	2.9	11.5	2.0
Crawford	380.7	24.2	2.4	21.8	5.7	27.2	3.3	23.9	7.1
Elk	416.0	37.4	9.7	27.7	6.7	16.7	1.5	15.2	4.0
Greenwood	726.2	29.0	3.8	25.2	3.5	34.5	5.1	29.4	4.8
Labette	417.8	20.2	4.2	16.0	3.8	18.2	1.0	17.2	4.4
Linn	384.5	56.6	7.9	48.7	12.7	24.9	3.2	21.7	6.5
Lyon	540.5	12.4	1.2	11.2	2.1	11.5	2.4	9.1	2.1
Marion	604.2	9.3	1.9	7.4	1.2	6.6	0.8	5.8	1.1
Montgomery	413.3	29.4	6.5	22.9	5.5	19.7	2.2	17.5	4.8
Morris	443.3	7.8	0.9	6.9	1.6	6.8	1.4	5.4	1.5
Neosho	368.7	17.1	3.3	13.8	3.7	16.2	1.1	15.1	4.4
Wilson	368.0	32.8	7.6	25.2	6.8	40.8	2.3	38.5	11.1
Woodson	318.8	15.8	3.2	12.6	4.0	15.2	1.5	13.7	4.8
All counties	9,813.3	536.3	99.3	437.0	4.5	458.0	50.3	407.7	4.7

(Table 9 continued on next page)

[1/] U.S. Department of Commerce, Bureau of the Census. 1980. State/county area measurement reports (unpublished).

(Table 9 continued)

WESTERN UNIT

County	Land area[1/]	Forest land				Nonforest land with trees			
		All forest	Non-commercial	Commercial	Percent commercial forest	All nonforest with trees	Wooded strips	Other nonforest with trees	Percent nonforest with trees
	Thousand acres				Percent	Thousand acres			Percent
Barber	727.2	6.9	0.3	6.6	0.9	17.5	2.2	15.3	2.4
Barton	573.1	1.1	--	1.1	0.2	0.5	0.1	0.4	0.1
Cheyenne	653.4	2.7	--	2.7	0.4	6.2	1.7	4.5	0.9
Clark	624.0	5.1	0.4	4.7	0.8	8.3	0.6	7.7	1.3
Cloud	459.3	8.7	0.1	8.6	1.9	5.5	0.1	5.4	1.2
Comanche	504.8	1.2	0.2	1.0	0.2	5.8	0.4	5.4	1.1
Decatur	572.0	2.3	--	2.3	0.4	2.1	0.8	1.3	0.4
Edwards	396.5	1.7	--	1.7	0.4	1.3	0.2	1.1	0.3
Ellis	576.3	2.7	--	2.7	0.5	4.0	0.3	3.7	0.7
Ellsworth	458.9	3.1	--	3.1	0.7	3.0	0.6	2.4	0.7
Finney	833.3	0.4	--	0.4	--	0.4	0.1	0.3	--
Ford	703.2	0.9	0.2	0.7	0.1	5.7	0.4	5.3	0.8
Gove	686.0	0.1	--	0.1	--	1.8	--	1.8	0.3
Graham	575.0	4.9	0.2	4.7	0.8	7.4	1.0	6.4	1.3
Grant	368.1	0.3	0.2	0.1	--	2.9	0.1	2.8	0.8
Gray	555.2	2.3	--	2.3	0.4	0.5	0.1	0.4	0.1
Greeley	498.2	0.1	--	0.1	--	0.3	--	0.3	0.1
Hamilton	638.4	3.5	0.2	3.3	0.5	3.0	0.4	2.6	0.5
Harper	513.3	5.1	0.4	4.7	0.9	17.7	1.4	16.3	3.4
Harvey	345.9	1.9	0.2	1.7	0.5	6.8	0.7	6.1	2.0
Haskell	369.7	--	--	--	--	--	--	--	--
Hodgeman	550.7	--	--	--	--	0.1	--	0.1	--
Jewell	582.2	11.1	1.3	9.8	1.7	12.1	1.5	10.6	2.1
Kearny	555.3	0.7	0.2	0.5	0.1	0.3	--	0.3	0.1
Kingman	553.9	8.0	1.0	7.0	1.3	21.6	1.6	20.0	3.9
Kiowa	462.6	0.7	0.1	0.6	0.1	2.5	1.2	1.3	0.5
Lane	459.1	0.1	--	0.1	--	--	--	--	--
Lincoln	460.6	3.3	0.2	3.1	0.7	8.1	0.9	7.2	1.8
Logan	686.9	1.0	--	1.0	0.1	0.4	0.1	0.3	0.1
McPherson	576.1	4.0	0.2	3.8	0.7	6.0	0.7	5.3	1.0
Meade	626.3	2.1	0.2	1.9	0.3	1.6	0.1	1.5	0.3
Mitchell	459.1	8.4	1.4	7.0	1.5	24.8	1.5	23.3	5.4
Morton	467.9	2.6	0.2	2.4	0.5	1.6	0.4	1.2	0.3
Ness	687.7	0.4	--	0.4	0.1	0.1	--	0.1	--
Norton	558.6	3.3	0.3	3.0	0.5	5.7	0.7	5.0	1.0
Osborne	564.4	6.5	0.2	6.3	1.1	6.1	0.7	5.4	1.1
Ottawa	461.3	7.3	0.6	6.7	1.5	9.0	0.3	8.7	2.0
Pawnee	483.1	2.3	0.4	1.9	0.4	8.5	1.6	6.9	1.8
Phillips	567.5	7.4	1.4	6.0	1.1	22.4	1.7	20.7	3.9
Pratt	470.5	1.6	--	1.6	0.3	0.6	0.1	0.5	0.1
Rawlins	684.4	2.2	0.2	2.0	0.3	1.8	0.4	1.4	0.3
Reno	805.6	7.3	1.0	6.3	0.8	23.9	0.9	23.0	3.0
Republic	459.9	8.7	0.5	8.2	1.8	10.8	0.9	9.9	2.3
Rice	465.9	1.8	0.2	1.6	0.3	3.4	0.2	3.2	0.7
Rooks	568.7	6.9	0.5	6.4	1.1	16.3	1.4	14.9	2.9
Rush	459.5	0.1	--	0.1	--	0.2	0.1	0.1	--
Russell	556.4	4.6	0.1	4.5	0.8	1.5	0.2	1.3	0.3

(Table 9 continued on next page)

[1/] U.S. Department of Commerce, Bureau of the Census. 1980. State/county area measurement reports (unpublished).

(Table 9 continued)

WESTERN UNIT

County	Land area[1/]	Forest land				Nonforest land with trees			
		All forest	Non-commercial	Commercial	Percent commercial forest	All nonforest with trees	Wooded strips	Other nonforest with trees	Percent nonforest with trees
	Thousand acres				Percent	Thousand acres			Percent
Saline	461.6	3.4	0.3	3.1	0.7	9.0	0.4	8.6	1.9
Scott	459.2	0.1	--	0.1	--	--	--	--	--
Sedgwick	644.7	8.0	1.2	6.8	1.1	19.1	0.7	18.4	3.0
Seward	409.7	2.1	0.1	2.0	0.5	3.1	0.6	2.5	0.8
Sheridan	573.5	1.2	--	1.2	0.2	0.6	0.1	0.5	0.1
Sherman	676.4	--	--	--	--	--	--	--	--
Smith	574.0	3.6	--	3.6	0.6	5.7	3.9	1.8	1.0
Stafford	504.0	3.7	0.2	3.5	0.7	10.1	0.4	9.7	2.0
Stanton	435.6	--	--	--	--	0.9	--	0.9	0.2
Stevens	465.6	0.6	--	0.6	0.1	0.4	0.1	0.3	0.1
Sumner	757.4	15.7	0.5	15.2	2.0	39.6	2.1	37.5	5.2
Thomas	687.7	0.3	--	0.3	--	0.2	--	0.2	--
Trego	569.8	1.8	0.3	1.5	0.3	5.9	0.3	5.6	1.0
Wallace	584.7	0.3	0.2	0.1	--	2.6	0.1	2.5	0.4
Wichita	459.9	--	--	--	--	--	--	--	--
All counties	34,129.8	198.2	15.4	182.8	0.5	387.3	37.1	350.2	1.1
All units	52,338.0	1,358.7	150.8	1,207.9	2.3	1,189.3	150.0	1,039.3	2.3

[1/] U.S. Department of Commerce, Bureau of the Census. 1980. State/county area measurement reports (unpublished).

Table 10.--Area of commercial forest land by ownership class and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Ownership class	All Units	Forest Survey Unit		
		Northeastern Unit	Southeastern Unit	Western Unit
National Forest	--	--	--	--
Miscellaneous federal	36.6	26.2	8.3	2.1
Indian	4.0	4.0	--	--
State	7.5	--	5.0	2.5
County and municipal	2.3	1.2	1.1	--
Farmer	749.5	338.7	284.1	126.7
Miscellaneous private	408.0	218.0	138.5	51.5
All owners	1,207.9	588.1	437.0	182.8

Table 11.--Area of commercial forest land by ownership class and forest type, Kansas, 1981

(In thousand acres)

Ownership class	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
National Forest	--	--	--	--	--	--	--	--	--	--	--
Miscellaneous federal	36.6	1.6	6.8	1.2	2.5	8.6	3.0	--	7.1	5.8	--
Indian	4.0	--	1.2	--	--	1.6	--	--	--	1.2	--
State	7.5	--	2.5	--	--	1.1	2.5	--	--	--	1.4
County and municipal	2.3	--	--	--	1.1	1.2	--	--	--	--	--
Farmer	749.5	18.7	184.4	22.6	26.8	182.2	35.2	1.0	186.6	63.3	28.7
Miscellaneous private	408.0	7.2	121.7	7.1	19.0	94.9	27.4	3.2	72.2	40.0	15.3
All owners	1,207.9	27.5	316.6	30.9	49.4	289.6	68.1	4.2	265.9	110.3	45.4

Table 12.--Area of commercial forest land by ownership class and site class, Kansas, 1981

(In thousand acres)

Ownership class	All classes	Site class (cubic feet of growth/acre/year)			
		119+	85-119	50-84	20-49
National Forest	--	--	--	--	--
Miscellaneous federal	36.6	--	3.7	16.8	16.1
Indian	4.0	--	--	--	4.0
State	7.5	--	2.2	1.3	4.0
County and municipal	2.3	--	2.3	--	--
Farmer	749.5	0.9	90.0	295.8	362.8
Miscellaneous private	408.0	1.2	60.7	171.6	174.5
All owners	1,207.9	2.1	158.9	485.5	561.4

Table 13.--Area of commercial forest land by ownership class and ownership-size class, Kansas, 1981

(In thousand acres)

Ownership class	All classes	Ownership-size class (acres)								
		1-5	5-10	10-20	20-50	50-100	100-500	500-2,500	2,500-5,000	5,000+
National Forest	--	--	--	--	--	--	--	--	--	--
Miscellaneous federal	36.6	--	--	--	--	--	--	--	--	36.6
Indian	4.0	--	--	--	--	--	--	--	--	4.0
State	7.5	--	--	--	--	--	--	--	--	7.5
County and municipal	2.3	--	--	--	--	--	--	2.3	--	--
Farmer	749.5	12.6	89.8	171.1	299.4	118.0	56.5	2.1	--	--
Miscellaneous private	408.0	18.4	43.0	101.2	101.9	76.6	38.5	19.8	--	8.6
All owners	1,207.9	31.0	132.8	272.3	401.3	194.6	95.0	24.2	--	56.7

Table 14.--Area of commercial forest land by ownership class, stand-size class, and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Ownership class	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
National Forest	--	--	--	--	--
Miscellaneous federal	36.6	18.1	4.4	14.1	--
Indian	4.0	1.2	--	2.8	--
State	7.5	3.6	2.5	--	1.4
County and municipal	2.3	2.3	--	--	--
Farmer	749.5	357.0	139.7	224.1	28.7
Miscellaneous private	408.0	182.8	87.8	122.1	15.3
All owners	1,207.9	565.0	234.4	363.1	45.4
NORTHEASTERN UNIT					
National Forest	--	--	--	--	--
Miscellaneous federal	26.2	13.4	1.1	11.7	--
Indian	4.0	1.2	--	2.8	--
State	--	--	--	--	--
County and municipal	1.2	1.2	--	--	--
Farmer	338.7	146.3	62.0	116.3	14.1
Miscellaneous private	218.0	80.9	49.2	82.7	5.2
All owners	588.1	243.0	112.3	213.5	19.3
SOUTHEASTERN UNIT					
National Forest	--	--	--	--	--
Miscellaneous federal	8.3	4.7	1.2	2.4	--
Indian	--	--	--	--	--
State	5.0	3.6	--	--	1.4
County and municipal	1.1	1.1	--	--	--
Farmer	284.1	127.0	58.9	94.1	4.1
Miscellaneous private	138.5	56.0	36.5	35.9	10.1
All owners	437.0	192.4	96.6	132.4	15.6
WESTERN UNIT					
National Forest	--	--	--	--	--
Miscellaneous federal	2.1	--	2.1	--	--
Indian	--	--	--	--	--
State	2.5	--	2.5	--	--
County and municipal	--	--	--	--	--
Farmer	126.7	83.7	18.8	13.7	10.5
Miscellaneous private	51.5	45.9	2.1	3.5	--
All owners	182.8	129.6	25.5	17.2	10.5

Table 15.--Area of commercial forest land by ownership class and area-condition class, Kansas, 1981

(In thousand acres)

Ownership class	All classes	Area-condition class			
		70	60	50	40 or better
National Forest	--	--	--	--	--
Miscellaneous federal	36.6	8.9	23.3	4.4	--
Indian	4.0	4.0	--	--	--
State	7.5	1.5	5.0	1.0	--
County and municipal	2.3	--	2.3	--	--
Farmer	749.5	360.9	335.0	53.6	--
Miscellaneous private	408.0	179.2	183.8	45.0	--
All owners	1,207.9	554.5	549.4	104.0	--

Table 16.--Area of commercial forest land by ownership class and stand-volume class, Kansas, 1981

(In thousand acres)

Ownership class	All classes	Stand-volume class (board feet[1] per acre)		
		Less than 1,500	1,500 to 5,000	5,000+
National Forest	--	--	--	--
Miscellaneous federal	36.6	15.8	12.4	8.4
Indian	4.0	2.8	1.2	--
State	7.5	4.0	--	3.5
County and municipal	2.3	--	1.2	1.1
Farmer	749.5	401.6	274.5	73.4
Miscellaneous private	408.0	221.4	139.6	47.0
All owners	1,207.9	645.6	428.9	133.4

[1] International 1/4-inch rule.

Table 17.--Area of commercial forest land by county and forest type, Kansas, 1981

(In thousand acres)

County	All types	Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
					NORTHEASTERN UNIT						
					Forest type						
Atchison	23.8	0.6	9.1	--	1.1	3.7	0.6	0.2	5.6	2.5	0.4
Brown	18.7	0.5	8.2	--	0.8	2.9	0.1	0.1	3.4	2.4	0.3
Clay	15.3	0.2	3.4	0.1	0.8	2.9	0.8	0.2	5.1	1.5	0.3
Dickinson	13.5	0.1	3.8	--	0.6	2.3	0.6	0.2	4.3	1.4	0.2
Doniphan	28.7	1.0	9.7	--	1.5	5.1	0.6	0.4	6.0	3.7	0.7
Douglas	28.1	0.8	10.7	0.2	1.4	4.5	0.1	--	4.4	5.3	0.7
Franklin	25.7	0.7	8.6	0.1	1.3	4.7	0.3	0.1	4.7	4.3	0.9
Geary	18.6	0.6	5.4	--	1.0	3.1	0.8	0.1	4.6	2.5	0.5
Jackson	32.4	0.7	6.5	--	1.1	9.1	0.7	0.3	6.2	5.4	2.4
Jefferson	41.0	0.7	15.0	0.2	2.1	6.6	0.9	--	7.5	6.6	1.4
Johnson	26.0	0.9	8.5	--	1.1	4.7	0.4	0.2	6.4	3.4	0.4
Leavenworth	43.3	0.3	13.5	0.1	2.2	7.2	2.4	0.1	9.4	5.6	2.5
Marshall	29.7	1.2	7.2	0.1	1.2	6.3	0.5	0.6	6.9	4.7	1.0
Miami	46.3	1.5	15.8	--	1.8	8.3	0.6	0.3	10.9	5.9	1.2
Nemaha	16.3	0.4	3.3	--	0.6	4.4	0.4	0.2	3.3	2.7	1.0
Osage	31.2	1.2	9.9	0.1	1.5	5.9	0.9	0.2	7.1	3.8	0.6
Pottawatomie	40.9	1.6	12.7	0.1	1.9	7.7	1.1	0.2	9.1	6.0	0.5
Riley	32.2	1.5	9.9	0.1	1.6	5.5	0.7	0.2	7.3	4.8	0.6
Shawnee	25.6	0.6	7.3	--	1.0	5.3	0.5	0.2	6.1	3.8	0.8
Wabaunsee	29.3	0.6	7.4	0.1	1.4	6.1	1.3	0.2	7.7	3.5	1.0
Washington	14.3	0.1	3.3	--	0.5	3.9	0.3	0.1	2.9	1.5	1.7
Wyandotte	7.2	0.1	3.5	--	0.3	0.7	--	0.1	1.5	0.8	0.2
All counties	588.1	15.9	182.7	1.2	26.8	110.9	14.6	4.2	130.4	82.1	19.3
					SOUTHEASTERN UNIT						
Allen	10.0	0.1	1.8	0.2	0.6	2.9	0.2	--	3.3	0.5	0.4
Anderson	15.6	0.6	3.8	0.7	0.8	4.0	0.4	--	3.7	0.9	0.7
Bourbon	35.1	1.2	14.9	3.8	1.3	5.6	--	--	5.6	2.0	0.7
Butler	21.2	0.1	3.1	0.2	1.2	8.1	0.3	--	6.1	1.1	1.0
Chase	9.9	0.1	1.6	0.1	0.5	2.8	0.2	--	3.9	0.3	0.4
Chautauqua	48.5	2.3	14.7	6.5	3.1	11.2	0.3	--	6.2	2.7	1.5
Cherokee	22.0	0.2	5.6	1.9	1.5	6.2	0.2	--	3.7	1.5	1.2
Coffey	10.0	0.1	2.9	0.7	0.7	2.4	0.1	--	1.7	0.7	0.7
Cowley	25.3	0.3	4.8	0.6	1.2	8.7	0.3	--	8.2	0.7	0.5
Crawford	21.8	0.4	5.2	0.7	0.9	6.0	0.5	--	5.9	1.4	0.8
Elk	27.7	1.6	7.8	2.6	1.4	7.2	0.3	--	4.4	1.5	0.9
Greenwood	25.2	0.4	4.4	0.7	1.5	7.2	0.9	--	7.4	1.5	1.2
Labette	16.0	0.2	4.7	1.5	1.1	4.0	0.1	--	2.5	1.1	0.8
Linn	48.7	1.7	19.8	2.3	1.7	7.8	0.4	--	10.5	3.0	1.5
Lyon	11.2	0.1	2.2	0.1	0.6	3.4	0.1	--	4.3	0.2	0.2
Marion	7.4	0.2	1.5	0.3	0.3	2.6	0.1	--	1.9	0.3	0.2
Montgomery	22.9	0.7	8.9	1.2	1.0	3.9	0.1	--	4.8	1.4	0.9
Morris	6.9	0.1	1.6	0.1	0.3	1.9	0.1	--	2.4	0.2	0.2
Neosho	13.8	0.1	3.7	1.3	0.9	3.8	0.1	--	2.3	1.0	0.6
Wilson	25.2	0.9	9.6	3.1	1.1	4.7	--	--	4.0	1.4	0.4
Woodson	12.6	0.2	3.5	1.1	0.9	3.1	0.2	--	1.9	0.9	0.8
All counties	437.0	11.6	126.1	29.7	22.6	107.5	4.9	--	94.7	24.3	15.6

(Table 17 continued on next page)

(Table 17 continued)

WESTERN UNIT

County	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Elm-ash-locust	Non-stocked
Barber	6.6	--	0.2	--	--	2.5	2.1	--	1.4	0.1	0.3
Barton	1.1	--	0.1	--	--	0.4	0.3	--	0.2	--	0.1
Cheyenne	2.7	--	0.1	--	--	0.9	0.9	--	0.6	0.1	0.1
Clark	4.7	--	0.1	--	--	1.8	1.8	--	0.8	--	0.2
Cloud	8.6	--	0.6	--	--	2.5	2.3	--	2.4	0.4	0.4
Comanche	1.0	--	--	--	--	0.5	0.2	--	0.3	--	--
Decatur	2.3	--	0.1	--	--	0.9	0.6	--	0.5	0.1	0.1
Edwards	1.7	--	--	--	--	0.5	0.7	--	0.2	--	0.3
Ellis	2.7	--	0.1	--	--	1.0	0.6	--	0.8	0.1	0.1
Ellsworth	3.1	--	0.2	--	--	0.9	0.8	--	0.9	0.1	0.2
Finney	0.4	--	--	--	--	0.2	0.1	--	0.1	--	--
Ford	0.7	--	--	--	--	0.4	0.1	--	0.2	--	--
Gove	0.1	--	--	--	--	0.1	--	--	--	--	--
Graham	4.7	--	0.2	--	--	1.8	1.3	--	1.1	0.1	0.2
Grant	0.1	--	--	--	--	0.1	--	--	--	--	--
Gray	2.3	--	--	--	--	0.3	1.9	--	0.1	--	--
Greeley	0.1	--	--	--	--	--	0.1	--	--	--	--
Hamilton	3.3	--	--	--	--	1.8	0.7	--	0.5	--	0.3
Harper	4.7	--	0.2	--	--	2.2	1.1	--	1.0	0.1	0.1
Harvey	1.7	--	--	--	--	0.9	0.4	--	0.3	--	0.1
Haskell	--	--	--	--	--	--	--	--	--	--	--
Hodgeman	--	--	--	--	--	--	--	--	--	--	--
Jewell	9.8	--	0.2	--	--	4.4	2.5	--	2.3	0.1	0.3
Kearny	0.5	--	--	--	--	0.2	0.2	--	0.1	--	--
Kingman	7.0	--	0.3	--	--	3.1	1.6	--	1.6	0.2	0.2
Kiowa	0.6	--	--	--	--	0.2	0.1	--	0.1	--	0.2
Lane	0.1	--	--	--	--	0.1	--	--	--	--	--
Lincoln	3.1	--	0.2	--	--	1.0	0.8	--	0.8	0.1	0.2
Logan	1.0	--	--	--	--	0.4	0.2	--	0.2	--	0.2
McPherson	3.8	--	0.2	--	--	0.9	1.3	--	0.9	0.1	0.4
Meade	1.9	--	--	--	--	0.7	0.7	--	0.4	--	0.1
Mitchell	7.0	--	0.4	--	--	2.9	1.3	--	1.9	0.2	0.3
Morton	2.4	--	--	--	--	1.1	0.5	--	0.4	0.1	0.3
Ness	0.4	--	--	--	--	0.1	0.1	--	0.1	0.1	--
Norton	3.0	--	0.1	--	--	1.4	0.7	--	0.6	--	0.2
Osborne	6.3	--	0.4	--	--	2.3	1.6	--	1.5	0.2	0.3
Ottawa	6.7	--	0.4	--	--	2.9	1.2	--	1.7	0.2	0.3
Pawnee	1.9	--	--	--	--	0.8	0.5	--	0.5	--	0.1
Phillips	6.0	--	0.2	--	--	2.4	1.7	--	1.4	0.1	0.2
Pratt	1.6	--	0.1	--	--	0.4	0.6	--	0.3	--	0.2
Rawlins	2.0	--	0.1	--	--	0.7	0.5	--	0.5	0.1	0.1
Reno	6.3	--	0.3	--	--	3.0	1.2	--	1.5	0.1	0.2
Republic	8.2	--	0.2	--	--	3.1	2.5	--	1.6	0.1	0.7
Rice	1.6	--	0.1	--	--	0.3	0.8	--	0.2	--	0.2
Rooks	6.4	--	0.3	--	--	2.6	1.8	--	1.3	0.1	0.3
Rush	0.1	--	--	--	--	0.1	--	--	--	--	--
Russell	4.5	--	0.3	--	--	1.3	1.3	--	1.1	0.1	0.4

(Table 17 continued on next page)

(Table 17 continued)

WESTERN UNIT

County	All types	Forest type: Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Elm-ash-locust	Non-stocked
Saline	3.1	--	0.2	--	--	1.1	0.6	--	1.0	0.1	0.1
Scott	0.1	--	--	--	--	0.1	--	--	--	--	--
Sedgwick	6.8	--	0.5	--	--	3.0	0.9	--	1.9	0.2	0.3
Seward	2.0	--	0.1	--	--	0.7	0.6	--	0.5	--	0.1
Sheridan	1.2	--	0.1	--	--	0.4	0.3	--	0.4	--	--
Sherman	--	--	--	--	--	--	--	--	--	--	--
Smith	3.6	--	0.1	--	--	1.5	0.9	--	0.8	0.1	0.2
Stafford	3.5	--	--	--	--	0.5	1.8	--	0.4	--	0.8
Stanton	--	--	--	--	--	--	--	--	--	--	--
Stevens	0.6	--	--	--	--	0.3	0.1	--	0.2	--	--
Sumner	15.2	--	1.0	--	--	6.6	3.3	--	2.8	0.5	1.0
Thomas	0.3	--	--	--	--	0.1	0.2	--	--	--	--
Trego	1.5	--	0.1	--	--	0.7	0.2	--	0.4	--	0.1
Wallace	0.1	--	--	--	--	0.1	--	--	--	--	--
Wichita	--	--	--	--	--	--	--	--	--	--	--
All counties	182.8	--	7.8	--	--	71.2	48.6	--	40.8	3.9	10.5
All units	1,207.9	27.5	316.6	30.9	49.4	289.6	68.1	4.2	265.9	110.3	45.4

Table 18.--Area of commercial forest land by forest type and stand-age class, Kansas, 1981

(In thousand acres)

Forest type	All classes	Stand-age class (years): 1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Eastern redcedar-hardwood	27.5	12.0	9.0	1.0	1.6	--	2.5	--	--	--	--	--	1.4	--
Oak-hickory	316.6	31.9	41.2	17.2	27.8	28.1	29.5	29.9	29.0	19.5	24.1	24.4	11.7	2.3
Post-blackjack oak	30.9	1.2	1.2	1.2	4.5	11.9	1.3	1.3	3.6	3.5	--	1.2	--	--
Upland plains hardwoods	49.4	5.3	9.7	3.9	6.1	4.9	5.6	7.8	1.2	1.2	--	1.2	2.5	--
Elm-ash-cottonwood	289.6	30.5	62.0	17.5	22.2	14.5	39.2	28.8	28.5	26.9	13.4	6.1	--	--
Cottonwood	68.1	1.2	1.3	2.4	4.2	9.4	6.6	17.1	10.6	2.3	6.7	6.3	--	--
Willow	4.2	1.2	1.2	.8	--	--	1.0	--	--	--	--	--	--	--
Lowland plains hardwoods	265.9	21.6	24.9	13.5	22.6	10.8	36.0	47.8	43.7	14.2	19.9	8.7	1.2	1.0
Upland elm-ash-locust	110.3	36.8	34.9	9.9	10.8	1.2	3.0	2.4	4.9	2.2	2.0	1.0	1.2	--
Nonstocked	45.4	13.1	7.5	7.2	3.8	--	7.0	2.1	3.8	.9	--	--	--	--
All types	1,207.9	154.8	192.9	74.6	103.6	80.8	131.7	137.2	125.3	70.7	66.1	48.9	18.0	3.3

Table 19.--Area of commercial forest land by forest type, stand-size class, and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Forest type	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
Eastern redcedar-hardwood	27.5	2.7	2.8	22.0	--
Oak-hickory	316.6	141.9	84.0	90.7	--
Post-blackjack oak	30.9	8.5	17.6	4.8	--
Upland plains hardwoods	49.4	18.7	16.8	13.9	--
Elm-ash-cottonwood	289.6	145.1	47.0	97.5	--
Cottonwood	68.1	59.6	4.9	3.6	--
Willow	4.2	1.0	0.8	2.4	--
Lowland plains hardwoods	265.9	170.7	46.7	48.5	--
Upland elm-ash-locust	110.3	16.8	13.8	79.7	--
Nonstocked	45.4	--	--	--	45.4
All types	1,207.9	565.0	234.4	363.1	45.4
NORTHEASTERN UNIT					
Eastern redcedar-hardwood	15.9	1.4	1.6	12.9	--
Oak-hickory	182.7	74.5	49.9	58.3	--
Post-blackjack oak	1.2	1.2	--	--	--
Upland plains hardwoods	26.8	13.1	8.6	5.1	--
Elm-ash-cottonwood	110.9	46.4	13.9	50.6	--
Cottonwood	14.6	11.2	1.1	2.3	--
Willow	4.2	1.0	0.8	2.4	--
Lowland plains hardwoods	130.4	78.6	27.2	24.6	--
Upland elm-ash-locust	82.1	15.6	9.2	57.3	--
Nonstocked	19.3	--	--	--	19.3
All types	588.1	243.0	112.3	213.5	19.3
SOUTHEASTERN UNIT					
Eastern redcedar-hardwood	11.6	1.3	1.2	9.1	--
Oak-hickory	126.1	59.6	34.1	32.4	--
Post-blackjack oak	29.7	7.3	17.6	4.8	--
Upland plains hardwoods	22.6	5.6	8.2	8.8	--
Elm-ash-cottonwood	107.5	52.3	17.0	38.2	--
Cottonwood	4.9	2.3	1.3	1.3	--
Willow	--	--	--	--	--
Lowland plains hardwoods	94.7	62.8	14.7	17.2	--
Upland elm-ash-locust	24.3	1.2	2.5	20.6	--
Nonstocked	15.6	--	--	--	15.6
All types	437.0	192.4	96.6	132.4	15.6
WESTERN UNIT					
Eastern redcedar-hardwood	--	--	--	--	--
Oak-hickory	7.8	7.8	--	--	--
Post-blackjack oak	--	--	--	--	--
Upland plains hardwoods	--	--	--	--	--
Elm-ash-cottonwood	71.2	46.4	16.1	8.7	--
Cottonwood	48.6	46.1	2.5	--	--
Willow	--	--	--	--	--
Lowland plains hardwoods	40.8	29.3	4.8	6.7	--
Upland elm-ash-locust	3.9	--	2.1	1.8	--
Nonstocked	10.5	--	--	--	10.5
All types	182.8	129.6	25.5	17.2	10.5

Table 20.--Area of commercial forest land by forest type, stand-size class, and site class, Kansas, 1981

(In thousand acres)

Forest type and stand-size class	All classes	Site class (cubic feet of growth/acre/year)			
		120+	85-119	50-84	20-49
Eastern redcedar-hardwood					
Sawtimber	2.7	--	--	--	2.7
Poletimber	2.8	--	--	1.2	1.6
Sapling & seedling	22.0	--	--	3.4	18.6
All stands	27.5	--	--	4.6	22.9
Oak-hickory					
Sawtimber	141.9	--	21.2	72.7	48.0
Poletimber	84.0	--	11.7	36.8	35.5
Sapling & seedling	90.7	--	7.4	34.5	48.8
All stands	316.6	--	40.3	144.0	132.3
Post-blackjack oak					
Sawtimber	8.5	--	--	1.2	7.3
Poletimber	17.6	--	--	3.5	14.1
Sapling & seedling	4.8	--	--	--	4.8
All stands	30.9	--	--	4.7	26.2
Upland plains hardwoods					
Sawtimber	18.7	--	3.0	9.3	6.4
Poletimber	16.8	--	4.0	7.2	5.6
Sapling & seedling	13.9	--	1.2	2.3	10.4
All stands	49.4	--	8.2	18.8	22.4
Elm-ash-cottonwood					
Sawtimber	145.1	--	27.6	65.0	52.5
Poletimber	47.0	--	8.9	17.8	20.3
Sapling & seedling	97.5	--	9.9	26.4	61.2
All stands	289.6	--	46.4	109.2	134.0
Cottonwood					
Sawtimber	59.6	--	4.8	21.9	32.9
Poletimber	4.9	--	--	--	4.9
Sapling & seedling	3.6	--	--	--	3.6
All stands	68.1	--	4.8	21.9	41.4
Willow					
Sawtimber	1.0	--	--	1.0	--
Poletimber	0.8	--	--	0.8	--
Sapling & seedling	2.4	--	--	1.2	1.2
All stands	4.2	--	--	3.0	1.2
Lowland plains hardwoods					
Sawtimber	170.7	2.1	35.5	100.7	32.4
Poletimber	46.7	--	8.6	23.3	14.8
Sapling & seedling	48.5	--	10.5	24.9	13.1
All stands	265.9	2.1	54.6	148.9	60.3
Upland elm-ash-locust					
Sawtimber	16.8	--	2.1	3.4	11.3
Poletimber	13.8	--	--	2.3	11.5
Sapling & seedling	79.7	--	--	13.0	66.7
All stands	110.3	--	2.1	18.7	89.5
Nonstocked	45.4	--	2.5	11.7	31.2
All types					
Sawtimber	565.0	2.1	94.2	275.2	193.5
Poletimber	234.4	--	33.2	92.9	108.3
Sapling & seedling	363.1	--	29.0	105.7	228.4
Nonstocked	45.4	--	2.5	11.7	31.2
All stands	1,207.9	2.1	158.9	485.5	561.4

Table 21.--Area of commercial forest land by forest type, stand-size class, and stocking percent, Kansas, 1981

(In thousand acres)

Forest type and stand-size class	All classes	Stocking percent of growing-stock trees				
		Less than 16.7	16.7-60	61-100	101-133	134+
Eastern redcedar-hardwood						
Sawtimber	2.7	--	--	2.7	--	--
Poletimber	2.8	--	1.6	1.2	--	--
Sapling & seedling	22.0	--	14.4	6.4	1.2	--
All stands	27.5	--	16.0	10.3	1.2	--
Oak-hickory						
Sawtimber	141.9	--	48.4	77.2	16.3	--
Poletimber	84.0	--	20.6	49.4	14.0	--
Sapling & seedling	90.7	--	40.1	42.5	8.1	--
All stands	316.6	--	109.1	169.1	38.4	--
Post-blackjack oak						
Sawtimber	8.5	--	2.5	6.0	--	--
Poletimber	17.6	--	2.5	12.8	2.3	--
Sapling & seedling	4.8	--	3.6	--	1.2	--
All stands	30.9	--	8.6	18.8	3.5	--
Upland plains hardwoods						
Sawtimber	18.7	--	11.0	7.7	--	--
Poletimber	16.8	--	11.3	5.5	--	--
Sapling & seedling	13.9	--	6.5	7.4	--	--
All stands	49.4	--	28.8	20.6	--	--
Elm-ash-cottonwood						
Sawtimber	145.1	--	62.8	67.4	14.9	--
Poletimber	47.0	--	26.2	20.8	--	--
Sapling & seedling	97.5	--	59.9	35.1	2.5	--
All stands	289.6	--	148.9	123.3	17.4	--
Cottonwood						
Sawtimber	59.6	--	19.4	23.9	16.3	--
Poletimber	4.9	--	1.3	3.6	--	--
Sapling & seedling	3.6	--	1.3	1.2	1.1	--
All stands	68.1	--	22.0	28.7	17.4	--
Willow						
Sawtimber	1.0	--	1.0	--	--	--
Poletimber	0.8	--	0.8	--	--	--
Sapling & seedling	2.4	--	1.2	--	1.2	--
All stands	4.2	--	3.0	--	1.2	--
Lowland plains hardwoods						
Sawtimber	170.7	--	64.9	92.3	13.5	--
Poletimber	46.7	--	21.7	25.0	--	--
Sapling & seedling	48.5	--	27.0	21.5	--	--
All stands	265.9	--	113.6	138.8	13.5	--
Upland elm-ash-locust						
Sawtimber	16.8	--	11.3	4.5	1.0	--
Poletimber	13.8	--	9.1	4.7	--	--
Sapling & seedling	79.7	--	52.9	25.4	1.4	--
All stands	110.3	--	73.3	34.6	2.4	--
Nonstocked	45.4	45.4	--	--	--	--
All types						
Sawtimber	565.0	--	221.3	281.7	62.0	--
Poletimber	234.4	--	95.1	123.0	16.3	--
Sapling & seedling	363.1	--	206.9	139.5	16.7	--
Nonstocked	45.4	45.4	--	--	--	--
All stands	1,207.9	45.4	523.3	544.2	95.0	--

Table 22.--Area of commercial forest land by forest type, site-index class, and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Forest type	All classes	Site-index class (feet)							
		21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
ALL UNITS									
Eastern redcedar-hardwood	27.5	1.9	10.0	6.0	4.9	4.7	--	--	--
Oak-hickory	316.6	--	20.4	58.6	109.4	63.1	45.5	12.9	6.7
Post-blackjack oak	30.9	--	8.3	11.9	8.3	1.2	1.2	--	--
Upland plains hardwoods	49.4	--	1.2	2.2	19.0	11.6	8.4	5.8	1.2
Elm-ash-cottonwood	289.6	--	3.5	22.1	60.4	90.2	67.1	36.4	9.9
Cottonwood	68.1	--	--	9.3	13.8	25.0	15.1	3.7	1.2
Willow	4.2	--	--	1.2	--	1.0	2.0	--	--
Lowland plains hardwoods	265.9	--	7.6	12.4	40.4	94.8	70.8	35.7	4.2
Upland elm-ash-locust	110.3	--	8.2	28.9	37.5	20.7	12.9	2.1	--
Nonstocked	45.4	--	3.9	11.3	9.8	14.3	3.6	2.5	--
All types	1,207.9	1.9	63.1	163.9	303.5	326.6	226.6	99.1	23.2
NORTHEASTERN UNIT									
Eastern redcedar-hardwood	15.9	1.9	7.2	3.1	2.7	1.0	--	--	--
Oak-hickory	182.7	--	7.0	41.2	63.0	30.8	29.0	7.9	3.8
Post-blackjack oak	1.2	--	1.2	--	--	--	--	--	--
Upland plains hardwoods	26.8	--	--	0.6	14.1	4.6	5.0	2.5	--
Elm-ash-cottonwood	110.9	--	3.5	18.4	23.5	18.4	28.7	15.6	2.8
Cottonwood	14.6	--	--	1.2	2.2	3.9	2.4	3.7	1.2
Willow	4.2	--	--	1.2	--	1.0	2.0	--	--
Lowland plains hardwoods	130.4	--	4.1	5.8	23.2	39.3	39.0	17.0	2.0
Upland elm-ash-locust	82.1	--	7.0	26.0	23.2	13.4	10.4	2.1	--
Nonstocked	19.3	--	2.4	8.8	2.0	4.6	1.5	--	--
All types	588.1	1.9	32.4	106.3	153.9	117.0	118.0	48.8	9.8
SOUTHEASTERN UNIT									
Eastern redcedar-hardwood	11.6	--	2.8	2.9	2.2	3.7	--	--	--
Oak-hickory	126.1	--	13.4	17.4	42.5	28.4	16.5	5.0	2.9
Post-blackjack oak	29.7	--	7.1	11.9	8.3	1.2	1.2	--	--
Upland plains hardwoods	22.6	--	1.2	1.6	4.9	7.0	3.4	3.3	1.2
Elm-ash-cottonwood	107.5	--	--	3.7	19.4	40.3	21.5	15.5	7.1
Cottonwood	4.9	--	--	1.3	--	2.6	1.0	--	--
Willow	--	--	--	--	--	--	--	--	--
Lowland plains hardwoods	94.7	--	--	3.9	10.7	43.1	21.4	13.4	2.2
Upland elm-ash-locust	24.3	--	1.2	2.9	10.4	7.3	2.5	--	--
Nonstocked	15.6	--	1.5	2.5	4.1	5.0	--	2.5	--
All types	437.0	--	27.2	48.1	102.5	138.6	67.5	39.7	13.4
WESTERN UNIT									
Eastern redcedar-hardwood	--	--	--	--	--	--	--	--	--
Oak-hickory	7.8	--	--	--	3.9	3.9	--	--	--
Post-blackjack oak	--	--	--	--	--	--	--	--	--
Upland plains hardwoods	--	--	--	--	--	--	--	--	--
Elm-ash-cottonwood	71.2	--	--	--	17.5	31.5	16.9	5.3	--
Cottonwood	48.6	--	--	6.8	11.6	18.5	11.7	--	--
Willow	--	--	--	--	--	--	--	--	--
Lowland plains hardwoods	40.8	--	3.5	2.7	6.5	12.4	10.4	5.3	--
Upland elm-ash-locust	3.9	--	--	--	3.9	--	--	--	--
Nonstocked	10.5	--	--	--	3.7	4.7	2.1	--	--
All types	182.8	--	3.5	9.5	47.1	71.0	41.1	10.6	--

Table 23.--Area of commercial forest land by forest type and basal-area class, Kansas, 1981

(In thousand acres)

Forest type	All classes	Basal-area class (square feet per acre)									
		0-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161-180	181+
Eastern redcedar-hardwood	27.5	6.5	8.1	7.5	2.8	--	2.6	--	--	--	--
Oak-hickory	316.6	13.9	42.4	83.5	78.3	60.6	30.6	4.6	2.7	--	--
Post-blackjack oak	30.9	--	2.4	3.7	10.8	9.3	3.6	1.1	--	--	--
Upland plains hardwoods	49.4	--	6.4	16.2	12.0	11.2	2.5	1.1	--	--	--
Elm-ash-cottonwood	289.6	11.5	49.7	88.9	56.8	31.0	34.3	8.5	3.0	5.9	--
Cottonwood	68.1	1.8	4.7	16.6	10.0	10.0	9.2	5.7	6.0	--	4.1
Willow	4.2	1.2	0.8	1.2	--	--	1.0	--	--	--	--
Lowland plains hardwoods	265.9	3.5	36.6	63.3	65.1	47.3	40.5	9.6	--	--	--
Upland elm-ash-locust	110.3	27.6	29.3	24.2	19.6	8.4	1.2	--	--	--	--
Nonstocked	45.4	19.9	9.8	14.7	1.0	--	--	--	--	--	--
All types	1,207.9	85.9	190.2	319.8	256.4	177.8	125.5	30.6	11.7	5.9	4.1

Table 24.--Area of commercial forest land by forest type and distance to road[1/], Kansas, 1981

(In thousand acres)

Forest type	All distances	Distance to road (miles)							
		0-1/8	1/8-1/4	1/4-1	1-2 1/2	2 1/2-5	5-10	10-20	20+
Eastern redcedar-hardwood	27.5	2.8	7.4	15.7	1.6	--	--	--	--
Oak-hickory	316.6	60.0	81.3	169.5	2.5	3.3	--	--	--
Post-blackjack oak	30.9	4.8	8.5	15.2	--	2.4	--	--	--
Upland plains hardwoods	49.4	15.8	11.4	17.8	--	4.4	--	--	--
Elm-ash-cottonwood	289.6	62.2	90.5	124.8	2.3	3.5	--	6.3	--
Cottonwood	68.1	7.1	24.6	33.0	3.4	--	--	--	--
Willow	4.2	--	3.0	1.2	--	--	--	--	--
Lowland plains hardwoods	265.9	50.4	90.0	117.5	7.0	--	--	1.0	--
Upland elm-ash-locust	110.3	28.2	34.0	42.1	2.5	2.5	--	1.0	--
Nonstocked	45.4	8.9	13.1	23.4	--	--	--	--	--
All types	1,207.9	240.2	363.8	560.2	19.3	16.1	--	8.3	--

[1/] A permanent road that is maintained at least once a year.

Table 25.--Area of commercial forest land by forest type and distance to water[1/], Kansas, 1981

(In thousand acres)

Forest type	All distances	Distance to water (miles)							
		0-1/8	1/8-1/4	1/4-1	1-2 1/2	2 1/2-5	5-10	10-20	20+
Eastern redcedar-hardwood	27.5	2.8	2.5	4.9	7.8	1.4	--	--	8.1
Oak-hickory	316.6	28.5	20.5	74.4	74.0	41.6	20.2	22.3	35.1
Post-blackjack oak	30.9	1.2	4.6	4.7	8.4	4.7	2.4	3.7	1.2
Upland plains hardwoods	49.4	2.3	3.6	6.1	6.0	9.6	8.8	6.5	6.5
Elm-ash-cottonwood	289.6	56.2	20.1	35.9	42.8	27.1	31.2	28.5	47.8
Cottonwood	68.1	19.1	8.0	9.6	3.6	2.9	5.3	6.9	12.7
Willow	4.2	1.0	--	1.2	0.8	1.2	--	--	--
Lowland plains hardwoods	265.9	44.9	11.9	36.3	37.2	47.4	31.2	31.1	25.9
Upland elm-ash-locust	110.3	9.9	8.6	22.1	26.6	23.6	4.4	3.6	11.5
Nonstocked	45.4	3.5	1.2	6.0	4.4	8.1	3.1	8.9	10.2
All types	1,207.9	169.4	81.0	201.2	211.6	167.6	106.6	111.5	159.0

[1/]Lakes or ponds 5 acres or larger in area, and streams or rivers at least 66 feet in width.

Table 26.--Area of commercial forest land by forest type and stand-area class, Kansas, 1981

(In thousand acres)

Forest type	All classes	Stand-area class (acres)								
		1-4	5-9	10-19	20-39	40-79	80-159	160-319	320-639	640+
Eastern redcedar-hardwood	27.5	3.5	10.2	5.8	3.6	--	4.4	--	--	--
Oak-hickory	316.6	33.1	67.7	94.7	43.6	40.8	17.2	8.3	9.3	1.9
Post-blackjack oak	30.9	1.2	4.9	7.0	7.2	3.7	3.5	3.4	--	--
Upland plains hardwoods	49.4	6.8	7.3	21.2	10.2	2.7	0	1.2	--	--
Elm-ash-cottonwood	289.6	74.1	83.6	66.7	34.9	13.7	8.7	5.5	1.1	1.3
Cottonwood	68.1	24.5	10.6	11.2	12.2	3.3	1.1	3.9	--	1.3
Willow	4.2	0.8	1.2	1.2	1.0	--	--	--	--	--
Lowland plains hardwoods	265.9	57.4	72.7	74.5	33.0	17.7	10.6	--	--	--
Upland elm-ash-locust	110.3	27.6	30.5	19.8	16.8	9.6	6.0	--	--	--
Nonstocked	45.4	14.8	15.5	7.6	--	1.2	1.2	5.1	--	--
All types	1,207.9	243.8	304.2	309.7	162.5	92.7	52.7	27.4	10.4	4.5

Table 27.--Area of commercial forest land by stocking class based on selected stand components, Kansas, 1981

(In thousand acres)

Stocking percentage	All live trees	Stocking classified in terms of			
		Growing-stock trees	Desirable trees	Acceptable trees	Rough and rotten trees
0-10	2.7	19.5	1,163.2	19.5	175.3
11-20	2.5	43.9	36.2	46.1	271.3
21-30	12.4	71.8	5.0	79.9	281.0
31-40	22.1	143.6	2.2	148.4	217.7
41-50	51.5	134.9	--	144.3	133.5
51-60	81.8	155.1	1.3	155.6	61.8
61-70	95.6	166.7	--	176.1	43.7
71-80	119.0	156.0	--	150.2	20.3
81-90	176.5	129.9	--	124.2	2.1
91-100	187.4	91.5	--	87.5	1.2
101-110	154.8	52.5	--	38.6	--
111-120	149.3	25.8	--	23.1	--
121-130	82.4	16.7	--	14.4	--
131-140	48.6	--	--	--	--
141-150	19.5	--	--	--	--
151-160	1.8	--	--	--	--
161+	--	--	--	--	--
Total	1,207.9	1,207.9	1,207.9	1,207.9	1,207.9

Table 28.--Area of commercial forest land by forest type, physiographic class, and ownership class, Kansas, 1981

(In thousand acres)

Forest type and physiographic class	All classes	Ownership class						
		National Forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
Eastern redcedar-hardwood								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--
Mesic	2.4	--	--	--	--	--	2.4	--
Xeromesic	25.1	--	1.6	--	--	--	16.3	7.2
Xeric	--	--	--	--	--	--	--	--
All classes	27.5	--	1.6	--	--	--	18.7	7.2
Oak-hickory								
Hydric	2.6	--	--	--	--	--	2.6	--
Hydromesic	7.6	--	--	--	--	--	4.2	3.4
Mesic	132.7	--	0.9	1.2	2.6	--	76.7	51.3
Xeromesic	155.5	--	5.9	--	--	--	88.5	61.1
Xeric	18.2	--	--	--	--	--	12.4	5.8
All classes	316.6	--	6.8	1.2	2.6	--	184.4	121.6
Post-blackjack oak								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	1.2	--	--	--	--	--	1.2	--
Mesic	9.8	--	--	--	--	--	8.5	1.3
Xeromesic	17.6	--	1.2	--	--	--	11.7	4.7
Xeric	2.3	--	--	--	--	--	1.1	1.2
All classes	30.9	--	1.2	--	--	--	22.5	7.2
Upland plains hardwoods								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--
Mesic	1.2	--	--	--	--	--	1.2	--
Xeromesic	46.5	--	2.5	--	--	1.1	23.9	19.0
Xeric	1.7	--	--	--	--	--	1.7	--
All classes	49.4	--	2.5	--	--	1.1	26.8	19.0
Elm-ash-cottonwood								
Hydric	9.0	--	--	--	--	--	2.3	6.7
Hydromesic	77.1	--	3.3	--	1.0	--	49.6	23.2
Mesic	203.5	--	5.3	1.6	--	1.2	130.3	65.1
Xeromesic	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--
All classes	289.6	--	8.6	1.6	1.0	1.2	182.2	95.0
Cottonwood								
Hydric	3.9	--	--	--	--	--	--	3.9
Hydromesic	20.2	--	3.0	--	2.5	--	6.9	7.8
Mesic	29.9	--	--	--	--	--	16.3	13.6
Xeromesic	6.9	--	--	--	--	--	4.8	2.1
Xeric	7.2	--	--	--	--	--	7.2	--
All classes	68.1	--	3.0	--	2.5	--	35.2	27.4

(Table 28 continued on next page)

(Table 28 continued)

Forest type and physiographic class	All classes	Ownership class: National Forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
Willow								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	3.4	--	--	--	--	--	1.0	2.4
Mesic	--	--	--	--	--	--	--	--
Xeromesic	0.8	--	--	--	--	--	--	0.8
Xeric	--	--	--	--	--	--	--	--
All classes	4.2	--	--	--	--	--	1.0	3.2
Lowland plains hardwoods								
Hydric	2.5	--	--	--	--	--	2.5	--
Hydromesic	52.3	--	2.7	--	--	--	31.6	18.0
Mesic	211.1	--	4.4	--	--	--	152.5	54.2
Xeromesic	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--
All classes	265.9	--	7.1	--	--	--	186.6	72.2
Upland elm-ash-locust								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--
Mesic	--	--	--	--	--	--	--	--
Xeromesic	100.5	--	5.8	1.2	--	--	54.7	38.8
Xeric	9.8	--	--	--	--	--	8.8	1.0
All classes	110.3	--	5.8	1.2	--	--	63.5	39.8
Nonstocked								
Hydric	9.1	--	--	--	1.4	--	--	7.7
Hydromesic	3.0	--	--	--	--	--	3.0	--
Mesic	11.5	--	--	--	--	--	7.7	3.8
Xeromesic	19.7	--	--	--	--	--	15.8	3.9
Xeric	2.1	--	--	--	--	--	2.1	--
All classes	45.4	--	--	--	1.4	--	28.6	15.4
All types								
Hydric	27.1	--	--	--	1.4	--	7.4	18.3
Hydromesic	164.8	--	9.0	--	3.5	--	97.5	54.8
Mesic	602.1	--	10.6	2.8	2.6	1.2	395.6	189.3
Xeromesic	372.6	--	17.0	1.2	--	1.1	215.7	137.6
Xeric	41.3	--	--	--	--	--	33.3	8.0
All classes	1,207.9	--	36.6	4.0	7.5	2.3	749.5	408.0

Table 29.--Area of noncommercial forest land by ownership class, Kansas, 1981

(In thousand acres)

Ownership class	Total	Unproductive	Productive-reserved
National Forest	--	--	--
Miscellaneous federal	13.8	--	13.8
Indian	--	--	--
State	2.8	--	2.8
County and municipal	4.8	--	4.8
Farmer	89.1	89.1	--
Miscellaneous private	40.3	39.3	1.0
All owners	150.8	128.4	22.4

Table 30.--Area of noncommercial forest land by forest type and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Forest type	Total	Unproductive	Productive-reserved
ALL UNITS			
Eastern redcedar-hardwood	24.6	17.1	7.5
Oak-hickory	23.1	13.2	9.9
Post-blackjack oak	76.0	76.0	--
Upland plains hardwoods	8.8	8.8	--
Elm-ash-cottonwood	7.8	5.3	2.5
Cottonwood	2.5	--	2.5
Willow	--	--	--
Lowland plains hardwoods	1.0	1.0	--
Upland elm-ash-locust	6.0	6.0	--
Nonstocked	1.0	1.0	--
All types	150.8	128.4	22.4
NORTHEASTERN UNIT			
Eastern redcedar-hardwood	19.0	11.5	7.5
Oak-hickory	7.6	--	7.6
Post-blackjack oak	2.4	2.4	--
Upland plains hardwoods	2.3	2.3	--
Elm-ash-cottonwood	--	--	--
Cottonwood	--	--	--
Willow	--	--	--
Lowland plains hardwoods	--	--	--
Upland elm-ash-locust	3.8	3.8	--
Nonstocked	1.0	1.0	--
All types	36.1	21.0	15.1
SOUTHEASTERN UNIT			
Eastern redcedar-hardwood	2.4	2.4	--
Oak-hickory	12.0	9.7	2.3
Post-blackjack oak	73.6	73.6	--
Upland plains hardwoods	6.5	6.5	--
Elm-ash-cottonwood	1.6	1.6	--
Cottonwood	--	--	--
Willow	--	--	--
Lowland plains hardwoods	1.0	1.0	--
Upland elm-ash-locust	2.2	2.2	--
Nonstocked	--	--	--
All types	99.3	97.0	2.3
WESTERN UNIT			
Eastern redcedar-hardwood	3.2	3.2	--
Oak-hickory	3.5	3.5	--
Post-blackjack oak	--	--	--
Upland plains hardwoods	--	--	--
Elm-ash-cottonwood	6.2	3.7	2.5
Cottonwood	2.5	--	2.5
Willow	--	--	--
Lowland plains hardwoods	--	--	--
Upland elm-ash-locust	--	--	--
Nonstocked	--	--	--
All types	15.4	10.4	5.0

Table 31.--Area of nonforest land with trees by land use, forest type, and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Land use	All types	Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
					ALL UNITS						
					Forest type						
Cropland	63.0	--	4.1	2.7	1.3	27.4	1.6	--	10.0	7.3	8.6
Improved pasture	533.6	26.4	24.4	11.7	11.7	122.4	13.5	--	15.1	190.0	118.4
Wooded strips	150.0	5.3	4.8	--	6.4	51.6	5.1	2.0	49.9	5.6	19.3
Idle farmland	23.9	--	--	--	--	18.0	--	--	1.3	1.4	3.2
Marsh	22.7	--	--	--	--	8.6	1.1	1.4	0.9	--	10.7
Windbreaks	186.3	9.8	1.4	--	4.3	48.9	3.2	--	1.4	117.3	--
Wooded pasture	209.8	13.3	12.7	--	11.1	55.4	8.9	--	10.0	14.5	83.9
All uses	1,189.3	54.8	47.4	14.4	34.8	332.3	33.4	3.4	88.6	336.1	244.1
					NORTHEASTERN UNIT						
Cropland	30.2	--	4.1	--	--	6.2	1.6	--	7.0	5.9	5.4
Improved pasture	139.4	9.9	14.8	--	5.4	29.4	--	--	3.8	51.7	24.4
Wooded strips	62.6	1.9	1.2	--	3.9	22.3	--	1.0	21.4	2.9	8.0
Idle farmland	4.1	--	--	--	--	2.7	--	--	--	1.4	--
Marsh	4.2	--	--	--	--	0.8	1.1	1.4	0.9	--	--
Windbreaks	43.0	2.9	1.4	--	3.0	6.1	--	--	1.4	28.2	--
Wooded pasture	60.5	3.4	6.3	--	2.3	13.8	--	--	3.0	4.5	27.2
All uses	344.0	18.1	27.8	--	14.6	81.3	2.7	2.4	37.5	94.6	65.0
					SOUTHEASTERN UNIT						
Cropland	13.6	--	--	2.7	1.3	5.2	--	--	3.0	1.4	--
Improved pasture	225.2	7.3	9.6	11.7	6.3	37.3	1.4	--	8.1	112.1	31.4
Wooded strips	50.3	--	3.6	--	2.5	13.6	--	1.0	18.9	2.7	8.0
Idle farmland	2.5	--	--	--	--	1.2	--	--	1.3	--	--
Marsh	4.3	--	--	--	--	4.3	--	--	--	--	--
Windbreaks	66.9	--	--	--	1.3	5.9	--	--	--	59.7	--
Wooded pasture	95.2	6.7	6.4	--	6.2	20.1	--	--	7.0	10.0	38.8
All uses	458.0	14.0	19.6	14.4	17.6	87.6	1.4	1.0	38.3	185.9	78.2
					WESTERN UNIT						
Cropland	19.2	--	--	--	--	16.0	--	--	--	--	3.2
Improved pasture	169.0	9.2	--	--	--	55.7	12.1	--	3.2	26.2	62.6
Wooded strips	37.1	3.4	--	--	--	15.7	5.1	--	9.6	--	3.3
Idle farmland	17.3	--	--	--	--	14.1	--	--	--	--	3.2
Marsh	14.2	--	--	--	--	3.5	--	--	--	--	10.7
Windbreaks	76.4	6.9	--	--	--	36.9	3.2	--	--	29.4	--
Wooded pasture	54.1	3.2	--	--	2.6	21.5	8.9	--	--	--	17.9
All uses	387.3	22.7	--	--	2.6	163.4	29.3	--	12.8	55.6	100.9

Table 32.--Area of nonforest land with trees by forest type and stand-size class, Kansas, 1981

(In thousand acres)

Forest type	All stands	Stand-size class			
		Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
Eastern redcedar-hardwood	54.8	--	16.8	38.0	--
Oak-hickory	47.4	14.5	14.7	18.2	--
Post-blackjack oak	14.4	1.3	6.2	6.9	--
Upland plains hardwoods	34.8	8.8	11.0	15.0	--
Elm-ash-cottonwood	332.3	51.8	144.3	136.2	--
Cottonwood	33.4	23.8	9.6	--	--
Willow	3.4	--	2.4	1.0	--
Lowland plains hardwoods	88.6	18.7	40.4	29.5	--
Upland elm-ash-locust	336.1	24.6	157.4	154.1	--
Nonstocked	244.1	--	--	--	244.1
All types	1,189.3	143.5	402.8	398.9	244.1

Table 33.--Area of windbreaks by forest type, stand-size class, and Forest Survey Unit, Kansas, 1981

(In thousand acres)

Forest type	All stands	Stand-size class: Sawtimber stands	Poletimber stands	Sapling and seedling stands	Nonstocked areas
ALL UNITS					
Eastern redcedar-hardwood	9.8	--	6.9	2.9	--
Oak-hickory	1.4	--	1.4	--	--
Post-blackjack oak	--	--	--	--	--
Upland plains hardwoods	4.3	1.6	2.7	--	--
Elm-ash-cottonwood	48.8	3.3	39.1	6.4	--
Cottonwood	3.2	--	3.2	--	--
Willow	--	--	--	--	--
Lowland plains hardwoods	1.4	--	1.4	--	--
Upland elm-ash-locust	117.4	11.4	87.0	19.0	--
Nonstocked	--	--	--	--	--
All types	186.3	16.3	141.7	28.3	--
NORTHEASTERN UNIT					
Eastern redcedar-hardwood	2.9	--	--	2.9	--
Oak-hickory	1.4	--	1.4	--	--
Post-blackjack oak	--	--	--	--	--
Upland plains hardwoods	3.0	1.6	1.4	--	--
Elm-ash-cottonwood	6.0	--	4.5	1.5	--
Cottonwood	--	--	--	--	--
Willow	--	--	--	--	--
Lowland plains hardwoods	1.4	--	1.4	--	--
Upland elm-ash-locust	28.3	2.8	19.8	5.7	--
Nonstocked	--	--	--	--	--
All types	43.0	4.4	28.5	10.1	--
SOUTHEASTERN UNIT					
Eastern redcedar-hardwood	--	--	--	--	--
Oak-hickory	--	--	--	--	--
Post-blackjack oak	--	--	--	--	--
Upland plains hardwoods	1.3	--	1.3	--	--
Elm-ash-cottonwood	5.9	--	4.2	1.7	--
Cottonwood	--	--	--	--	--
Willow	--	--	--	--	--
Lowland plains hardwoods	--	--	--	--	--
Upland elm-ash-locust	59.7	1.3	48.3	10.1	--
Nonstocked	--	--	--	--	--
All types	66.9	1.3	53.8	11.8	--
WESTERN UNIT					
Eastern redcedar-hardwood	6.9	--	6.9	--	--
Oak-hickory	--	--	--	--	--
Post-blackjack oak	--	--	--	--	--
Upland plains hardwoods	--	--	--	--	--
Elm-ash-cottonwood	36.9	3.3	30.4	3.2	--
Cottonwood	3.2	--	3.2	--	--
Willow	--	--	--	--	--
Lowland plains hardwoods	--	--	--	--	--
Upland elm-ash-locust	29.4	7.3	18.9	3.2	--
Nonstocked	--	--	--	--	--
All types	76.4	10.6	59.4	6.4	--

Table 34.--Area of wooded strips by forest type, stand-size class, and ownership class, Kansas, 1981

(In thousand acres)

Forest type and stand-size class	All classes	Ownership class						
		National Forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
Eastern redcedar-hardwood								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	3.4	--	--	--	--	--	3.4	--
Sapling & seedling	1.9	--	--	--	--	--	1.9	--
All stands	5.3	--	--	--	--	--	5.3	--
Oak-hickory								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	2.4	--	--	--	--	--	2.4	--
Sapling & seedling	2.7	--	--	--	--	--	2.7	--
All stands	5.1	--	--	--	--	--	5.1	--
Post-blackjack oak								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	--	--	--	--	--	--	--	--
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	--	--	--	--	--	--	--	--
Upland plains hardwoods								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	2.8	--	--	--	--	--	2.8	--
Sapling & seedling	3.6	--	--	--	--	--	2.0	1.6
All stands	6.4	--	--	--	--	--	4.8	1.6
Elm-ash-cottonwood								
Sawtimber	4.6	--	1.3	--	--	--	3.3	--
Poletimber	24.1	--	3.3	--	--	--	17.8	3.0
Sapling & seedling	23.1	--	--	--	--	--	17.4	5.7
All stands	51.8	--	4.6	--	--	--	38.5	8.7
Cottonwood								
Sawtimber	2.5	--	--	--	--	--	2.5	--
Poletimber	2.6	--	--	--	--	--	--	2.6
Sapling & seedling	--	--	--	--	--	--	--	--
All stands	5.1	--	--	--	--	--	2.5	2.6
Willow								
Sawtimber	--	--	--	--	--	--	--	--
Poletimber	1.0	--	--	--	--	--	1.0	--
Sapling & seedling	1.0	--	--	--	--	--	1.0	--
All stands	2.0	--	--	--	--	--	2.0	--
Lowland plains hardwoods								
Sawtimber	6.8	--	--	--	--	--	3.7	3.1
Poletimber	13.5	--	--	--	--	--	12.1	1.4
Sapling & seedling	14.9	--	--	--	--	--	13.9	1.0
All stands	35.2	--	--	--	--	--	29.7	5.5
Upland elm-ash-locust								
Sawtimber	1.4	--	--	--	--	--	--	1.4
Poletimber	8.1	--	--	--	--	--	6.6	1.5
Sapling & seedling	10.4	--	1.2	--	--	--	4.0	5.2
All stands	19.9	--	1.2	--	--	--	10.6	8.1
Nonstocked	19.2	--	--	--	--	--	16.1	3.1
All types								
Sawtimber	15.3	--	1.3	--	--	--	9.5	4.5
Poletimber	57.9	--	3.3	--	--	--	46.1	8.5
Sapling & seedling	57.6	--	1.2	--	--	--	42.9	13.5
Nonstocked	19.2	--	--	--	--	--	16.1	3.1
All stands	150.0	--	5.8	--	--	--	114.6	29.6

Table 35.--Area of wooded strips by forest type and site-index class, Kansas, 1981

(In thousand acres)

Forest type	All classes	Site-index class (feet)							
		21-30	31-40	41-50	51-60	61-70	71-80	81-90	91+
Eastern redcedar-hardwood	5.3	--	--	1.9	3.4	--	--	--	--
Oak-hickory	5.1	--	--	2.4	--	2.7	--	--	--
Post-blackjack oak	--	--	--	--	--	--	--	--	--
Upland plains hardwoods	6.4	--	--	5.5	--	--	0.9	--	--
Elm-ash-cottonwood	51.8	--	1.2	19.2	9.9	15.3	1.5	4.7	--
Cottonwood	5.1	--	--	2.5	2.6	--	--	--	--
Willow	2.0	--	--	1.0	--	--	--	1.0	--
Lowland plains hardwoods	35.2	--	--	20.5	4.7	7.2	1.4	1.4	--
Upland elm-ash-locust	19.9	--	--	9.6	6.6	3.7	--	--	--
Nonstocked	19.2	--	--	10.4	4.7	3.1	1.0	--	--
All types	150.0	--	1.2	73.0	31.9	32.0	4.8	7.1	--

Table 36.--Area of wooded strips by forest type, basal-area class, and Forest Survey Unit, Kansas, 1981

(In thousand acres)

ALL UNITS

Forest type	All classes	Basal-area class (square feet per acre) 0-20	21-40	41-60	61-80	81-100	101-120	121-140	141-160	161-180	181+
Eastern redcedar-hardwood	5.3	--	1.9	--	--	--	--	--	--	--	3.4
Oak-hickory	5.1	1.2	1.5	--	1.2	--	--	--	--	1.2	--
Post-blackjack oak	--	--	--	--	--	--	--	--	--	--	--
Upland plains hardwoods	6.4	--	1.4	1.6	0.9	1.4	--	1.1	--	--	--
Elm-ash-cottonwood	51.8	1.4	10.1	5.5	12.5	3.6	4.0	8.6	4.2	1.0	0.9
Cottonwood	5.1	--	--	--	--	2.5	--	--	--	--	2.6
Willow	2.0	--	--	--	--	--	1.0	--	--	1.0	--
Lowland plains hardwoods	35.2	3.0	6.1	2.5	8.8	4.0	6.5	1.4	--	2.9	--
Upland elm-ash-locust	19.9	--	3.9	5.2	5.5	2.4	--	1.4	--	--	1.5
Nonstocked	19.2	3.8	5.5	--	5.5	1.4	1.4	1.6	--	--	--
All types	150.0	9.4	30.4	14.8	34.4	15.3	12.9	14.1	4.2	6.1	8.4
NORTHEASTERN UNIT											
Eastern redcedar-hardwood	1.9	--	1.9	--	--	--	--	--	--	--	--
Oak-hickory	2.4	1.2	--	--	1.2	--	--	--	--	--	--
Post-blackjack oak	--	--	--	--	--	--	--	--	--	--	--
Upland plains hardwoods	3.9	--	--	1.6	0.9	1.4	--	--	--	--	--
Elm-ash-cottonwood	18.0	1.4	1.4	4.1	5.6	--	2.7	1.0	0.9	--	0.9
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Willow	1.0	--	--	--	--	--	1.0	--	--	--	--
Lowland plains hardwoods	16.4	0.9	1.2	1.2	4.7	1.6	3.9	--	--	2.9	--
Upland elm-ash-locust	11.1	--	1.4	2.7	4.1	--	--	1.4	--	--	1.5
Nonstocked	7.9	2.4	1.4	--	1.1	1.4	--	1.6	--	--	--
All types	62.6	5.9	7.3	9.6	17.6	4.4	7.6	4.0	0.9	2.9	2.4
SOUTHEASTERN UNIT											
Eastern redcedar-hardwood	--	--	--	--	--	--	--	--	--	--	--
Oak-hickory	2.7	--	1.5	--	--	--	--	--	--	1.2	--
Post-blackjack oak	--	--	--	--	--	--	--	--	--	--	--
Upland plains hardwoods	2.5	--	1.4	--	--	--	--	1.1	--	--	--
Elm-ash-cottonwood	16.1	--	5.5	1.4	3.5	3.6	--	1.1	--	1.0	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Willow	1.0	--	--	--	--	--	--	--	--	1.0	--
Lowland plains hardwoods	13.7	2.1	2.4	1.3	4.1	2.4	--	1.4	--	--	--
Upland elm-ash-locust	6.3	--	2.5	--	1.4	2.4	--	--	--	--	--
Nonstocked	8.0	1.4	4.1	--	1.1	--	1.4	--	--	--	--
All types	50.3	3.5	17.4	2.7	10.1	8.4	1.4	3.6	--	3.2	--
WESTERN UNIT											
Eastern redcedar-hardwood	3.4	--	--	--	--	--	--	--	--	--	3.4
Oak-hickory	--	--	--	--	--	--	--	--	--	--	--
Post-blackjack oak	--	--	--	--	--	--	--	--	--	--	--
Upland plains hardwoods	--	--	--	--	--	--	--	--	--	--	--
Elm-ash-cottonwood	17.7	--	3.2	--	3.4	--	1.3	6.5	3.3	--	--
Cottonwood	5.1	--	--	--	--	2.5	--	--	--	--	2.6
Willow	--	--	--	--	--	--	--	--	--	--	--
Lowland plains hardwoods	5.1	--	2.5	--	--	--	2.6	--	--	--	--
Upland elm-ash-locust	2.5	--	--	2.5	--	--	--	--	--	--	--
Nonstocked	3.3	--	--	--	3.3	--	--	--	--	--	--
All types	37.1	--	5.7	2.5	6.7	2.5	3.9	6.5	3.3	--	6.0

Table 37.--Area of wooded strips by forest type and stand-age class, Kansas, 1981

(In thousand acres)

Forest type	All classes	Stand-age class (years)										
		1-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101+
Eastern redcedar-hardwood	5.3	--	1.9	3.4	--	--	--	--	--	--	--	--
Oak-hickory	5.1	1.2	1.5	--	--	2.4	--	--	--	--	--	--
Post-blackjack oak	--	--	--	--	--	--	--	--	--	--	--	--
Upland plains hardwoods	6.4	--	3.6	--	1.4	--	1.4	--	--	--	--	--
Elm-ash-cottonwood	51.8	6.1	17.1	10.2	4.8	5.1	2.1	3.2	3.2	--	--	--
Cottonwood	5.1	--	2.5	--	--	--	--	2.6	--	--	--	--
Willow	2.0	1.0	--	--	1.0	--	--	--	--	--	--	--
Lowland plains hardwoods	35.2	8.5	7.8	3.8	5.4	2.8	2.6	2.7	1.6	--	--	--
Upland elm-ash-locust	19.9	3.0	3.9	3.8	5.3	--	--	2.5	--	1.4	--	--
Nonstocked	19.2	5.3	4.1	2.4	--	--	3.0	3.3	--	--	1.1	--
All types	150.0	25.1	42.4	23.6	17.9	10.3	9.1	14.3	4.8	1.4	1.1	--

Table 38.--Area of wooded strips by forest type, physiographic class, and ownership class, Kansas, 1981

(In thousand acres)

Forest type and physiographic class	All classes	Ownership class						
		National Forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
Eastern redcedar-hardwood								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--
Mesic	--	--	--	--	--	--	--	--
Xeromesic	5.3	--	--	--	--	--	5.3	--
Xeric	--	--	--	--	--	--	--	--
All classes	5.3	--	--	--	--	--	5.3	--
Oak-hickory								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	1.5	--	--	--	--	--	1.5	--
Mesic	3.6	--	--	--	--	--	3.6	--
Xeromesic	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--
All classes	5.1	--	--	--	--	--	5.1	--
Post-blackjack oak								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--
Mesic	--	--	--	--	--	--	--	--
Xeromesic	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--
All classes	--	--	--	--	--	--	--	--
Upland plains hardwoods								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--
Mesic	1.4	--	--	--	--	--	1.4	--
Xeromesic	5.0	--	--	--	--	--	3.4	1.6
Xeric	--	--	--	--	--	--	--	--
All classes	6.4	--	--	--	--	--	4.8	1.6
Elm-ash-cottonwood								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	12.9	--	3.3	--	--	--	5.0	4.6
Mesic	38.9	--	1.3	--	--	--	33.5	4.1
Xeromesic	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--
All classes	51.8	--	4.6	--	--	--	38.5	8.7
Cottonwood								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	2.6	--	--	--	--	--	--	2.6
Mesic	--	--	--	--	--	--	--	--
Xeromesic	2.5	--	--	--	--	--	2.5	--
Xeric	--	--	--	--	--	--	--	--
All classes	5.1	--	--	--	--	--	2.5	2.6

(Table 38 continued on next page)

(Table 38 continued)

Forest type and physiographic class	All classes	Ownership class						
		National Forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
Willow								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	1.0	--	--	--	--	--	1.0	--
Mesic	1.0	--	--	--	--	--	1.0	--
Xeromesic	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--
All classes	2.0	--	--	--	--	--	2.0	--
Lowland plains hardwoods								
Hydric	1.4	--	--	--	--	--	1.4	--
Hydromesic	10.9	--	--	--	--	--	10.0	0.9
Mesic	22.9	--	--	--	--	--	18.3	4.6
Xeromesic	--	--	--	--	--	--	--	--
Xeric	--	--	--	--	--	--	--	--
All classes	35.2	--	--	--	--	--	29.7	5.5
Upland elm-ash-locust								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	--	--	--	--	--	--	--	--
Mesic	1.5	--	--	--	--	--	--	1.5
Xeromesic	15.6	--	1.2	--	--	--	7.8	6.6
Xeric	2.8	--	--	--	--	--	2.8	--
All classes	19.9	--	1.2	--	--	--	10.6	8.1
Nonstocked								
Hydric	--	--	--	--	--	--	--	--
Hydromesic	1.4	--	--	--	--	--	1.4	--
Mesic	10.8	--	--	--	--	--	7.7	3.1
Xeromesic	7.0	--	--	--	--	--	7.0	--
Xeric	--	--	--	--	--	--	--	--
All classes	19.2	--	--	--	--	--	16.1	3.1
All types								
Hydric	1.4	--	--	--	--	--	1.4	--
Hydromesic	30.3	--	3.3	--	--	--	18.9	8.1
Mesic	80.1	--	1.3	--	--	--	65.5	13.3
Xeromesic	35.4	--	1.2	--	--	--	26.0	8.2
Xeric	2.8	--	--	--	--	--	2.8	--
All classes	150.0	--	5.8	--	--	--	114.6	29.6

Table 39.--Area of wooded strips in private ownership by ownership class, owner tenure, and ownership-size class, Kansas, 1981

(In thousand acres)

Ownership class and owner tenure	All classes	Ownership-size class (acres)						
		1-5	5-10	10-20	20-50	50-100	100-500	500+
ALL UNITS								
Farmer								
1-4 years	14.2	--	3.7	5.1	1.0	4.4	--	--
5-9 years	19.3	3.3	4.1	6.2	2.9	2.8	--	--
10-19 years	24.5	--	8.2	7.9	7.1	1.3	--	--
20+ years	56.7	1.6	25.9	15.9	8.7	2.4	2.2	--
Total	114.7	4.9	41.9	35.1	19.7	10.9	2.2	--
Miscellaneous private corporation								
1-4 years	1.4	--	1.4	--	--	--	--	--
5-9 years	1.0	--	--	--	--	--	1.0	--
10-19 years	--	--	--	--	--	--	--	--
20+ years	--	--	--	--	--	--	--	--
Total	2.4	--	1.4	--	--	--	1.0	--
Miscellaneous private individual								
1-4 years	3.7	--	--	2.3	1.4	--	--	--
5-9 years	4.4	3.0	1.4	--	--	--	--	--
10-19 years	5.2	0.9	--	4.3	--	--	--	--
20+ years	13.8	1.4	2.5	7.3	--	1.6	1.0	--
Total	27.1	5.3	3.9	13.9	1.4	1.6	1.0	--
All owners								
1-4 years	19.3	--	5.1	7.4	2.4	4.4	--	--
5-9 years	24.7	6.3	5.5	6.2	2.9	2.8	1.0	--
10-19 years	29.7	0.9	8.2	12.2	7.1	1.3	--	--
20+ years	70.5	3.0	28.4	23.2	8.7	4.0	3.2	--
Total	144.2	10.2	47.2	49.0	21.1	12.5	4.2	--
NORTHEASTERN UNIT								
Farmer								
1-4 years	7.1	--	1.5	1.2	--	4.4	--	--
5-9 years	11.4	--	2.7	4.6	2.9	1.2	--	--
10-19 years	12.1	--	5.6	2.9	3.6	--	--	--
20+ years	18.5	1.6	5.5	5.0	4.2	--	2.2	--
Total	49.1	1.6	15.3	13.7	10.7	5.6	2.2	--
Miscellaneous private corporation								
1-4 years	1.4	--	1.4	--	--	--	--	--
5-9 years	--	--	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--	--	--
20+ years	--	--	--	--	--	--	--	--
Total	1.4	--	1.4	--	--	--	--	--
Miscellaneous private individual								
1-4 years	--	--	--	--	--	--	--	--
5-9 years	3.0	3.0	--	--	--	--	--	--
10-19 years	2.5	0.9	--	1.6	--	--	--	--
20+ years	6.6	1.4	--	2.6	--	1.6	1.0	--
Total	12.1	5.3	--	4.2	--	1.6	1.0	--
All owners								
1-4 years	8.5	--	2.9	1.2	--	4.4	--	--
5-9 years	14.4	3.0	2.7	4.6	2.9	1.2	--	--
10-19 years	14.6	0.9	5.6	4.5	3.6	--	--	--
20+ years	25.1	3.0	5.5	7.6	4.2	1.6	3.2	--
Total	62.6	6.9	16.7	17.9	10.7	7.2	3.2	--

(Table 39 continued on next page)

(Table 39 continued)

Ownership class and owner tenure	All classes	Ownership-size class (acres) 1-5	5-10	10-20	20-50	50-100	100-500	500+
SOUTHEASTERN UNIT								
Farmer								
1-4 years	7.1	--	2.2	3.9	1.0	--	--	--
5-9 years	4.6	--	1.4	1.6	--	1.6	--	--
10-19 years	12.4	--	2.6	5.0	3.5	1.3	--	--
20+ years	13.4	--	2.4	7.5	1.1	2.4	--	--
Total	37.5	--	8.6	18.0	5.6	5.3	--	--
Miscellaneous private corporation								
1-4 years	--	--	--	--	--	--	--	--
5-9 years	1.0	--	--	--	--	--	1.0	--
10-19 years	--	--	--	--	--	--	--	--
20+ years	--	--	--	--	--	--	--	--
Total	1.0	--	--	--	--	--	1.0	--
Miscellaneous private individual								
1-4 years	3.7	--	--	2.3	1.4	--	--	--
5-9 years	1.4	--	1.4	--	--	--	--	--
10-19 years	2.7	--	--	2.7	--	--	--	--
20+ years	1.4	--	--	1.4	--	--	--	--
Total	9.2	--	1.4	6.4	1.4	--	--	--
All owners								
1-4 years	10.8	--	2.2	6.2	2.4	--	--	--
5-9 years	7.0	--	2.8	1.6	--	1.6	1.0	--
10-19 years	15.1	--	2.6	7.7	3.5	1.3	--	--
20+ years	14.8	--	2.4	8.9	1.1	2.4	--	--
Total	47.7	--	10.0	24.4	7.0	5.3	1.0	--
WESTERN UNIT								
Farmer								
1-4 years	--	--	--	--	--	--	--	--
5-9 years	3.3	3.3	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--	--	--
20+ years	24.8	--	18.0	3.4	3.4	--	--	--
Total	28.1	3.3	18.0	3.4	3.4	--	--	--
Miscellaneous private corporation								
1-4 years	--	--	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--	--	--
20+ years	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--
Miscellaneous private individual								
1-4 years	--	--	--	--	--	--	--	--
5-9 years	--	--	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--	--	--
20+ years	5.8	--	2.5	3.3	--	--	--	--
Total	5.8	--	2.5	3.3	--	--	--	--
All owners								
1-4 years	--	--	--	--	--	--	--	--
5-9 years	3.3	3.3	--	--	--	--	--	--
10-19 years	--	--	--	--	--	--	--	--
20+ years	30.6	--	20.5	6.7	3.4	--	--	--
Total	33.9	3.3	20.5	6.7	3.4	--	--	--

Table 40.--Number of all live trees on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS															
Eastern redcedar	8,560	4,553	2,393	997	408	84	69	39	10	2	5	--	--	--	--
Total	8,560	4,553	2,393	997	408	84	69	39	10	2	5	--	--	--	--
HARDWOODS															
Bur oak	8,760	3,323	1,100	1,133	715	524	332	288	299	264	209	198	279	88	8
Select white oak	13,569	2,932	3,198	2,463	1,908	1,460	702	346	253	125	81	44	49	7	1
Other white oak	13,305	2,334	5,017	3,098	1,409	809	294	187	87	48	6	10	6	--	--
Select red oak	8,696	2,420	1,904	899	950	795	647	322	265	167	141	63	92	28	3
Other red oak	7,875	2,964	1,327	1,253	866	460	346	184	133	105	79	59	78	19	2
Select hickory	14,239	8,299	2,237	1,960	899	362	198	151	61	49	15	4	4	--	--
Other hickory	12,579	6,802	2,943	1,474	730	378	150	66	12	11	7	3	3	--	--
Pecan	2,783	832	937	317	220	204	107	69	37	23	13	15	5	4	--
Hard maple	4,477	2,872	944	260	235	88	51	19	2	2	2	1	--	1	--
Soft maple	3,209	1,322	505	292	279	194	122	150	98	78	47	36	60	20	6
Ash	38,977	19,576	8,911	4,173	2,791	1,445	681	545	306	246	110	70	117	6	--
Cottonwood	8,576	1,834	366	1,215	997	1,085	816	658	452	269	252	107	303	158	64
Basswood	5,162	3,681	643	259	171	136	108	70	38	21	19	9	6	1	--
Elm	98,365	67,331	19,142	6,684	2,684	1,202	542	297	161	111	69	43	84	14	1
Black walnut	27,581	10,664	6,161	4,485	2,085	1,833	1,077	639	356	153	64	44	16	4	--
Willow	5,094	2,517	904	466	332	238	245	153	94	60	45	19	19	1	1
Boxelder	12,941	5,172	2,862	2,087	1,144	660	436	197	159	108	44	30	32	9	1
Hackberry	54,901	28,513	12,848	5,238	3,149	1,943	1,215	762	538	303	174	105	87	26	--
Sycamore	2,315	798	567	140	207	108	106	73	96	51	37	39	55	31	7
Other hardwoods	53,074	27,537	11,647	6,665	3,286	1,583	1,023	547	336	185	122	60	64	18	1
Noncommercial species	58,163	35,575	13,691	4,894	2,160	926	498	177	117	60	25	17	20	3	--
Total	454,641	237,298	97,854	49,455	27,217	16,433	9,696	5,900	3,900	2,439	1,561	976	1,379	438	95
All species	463,201	241,851	100,247	50,452	27,625	16,517	9,765	5,939	3,910	2,441	1,566	976	1,379	438	95

Table 41.--Number of growing-stock trees on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 1.0-2.9	3.0-4.9	5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS															
Eastern redcedar	7,926	4,430	2,255	766	314	66	63	22	3	2	5	--	--	--	--
Total	7,926	4,430	2,255	766	314	66	63	22	3	2	5	--	--	--	--
HARDWOODS															
Bur oak	6,707	2,504	894	868	527	422	221	225	233	208	172	152	212	65	4
Select white oak	7,626	1,856	1,804	1,198	922	809	428	242	174	82	52	24	30	5	--
Other white oak	10,252	1,502	4,174	2,347	1,108	666	179	163	67	34	4	5	3	--	--
Select red oak	6,987	1,944	1,520	656	834	683	524	226	214	141	108	40	77	18	2
Other red oak	5,659	2,140	994	819	584	389	216	154	92	77	67	50	61	15	1
Select hickory	11,987	6,884	2,025	1,601	750	347	156	117	53	42	8	1	3	--	--
Other hickory	10,375	5,310	2,704	1,270	550	339	107	62	12	11	7	3	--	--	--
Pecan	2,198	707	684	204	207	185	89	50	27	18	8	11	4	4	--
Hard maple	3,605	2,360	683	198	211	81	45	19	2	2	2	1	--	1	--
Soft maple	2,071	797	226	177	258	141	87	116	84	63	38	28	43	10	3
Ash	31,604	16,178	7,589	3,029	2,202	1,149	482	388	216	168	74	42	82	5	--
Cottonwood	7,574	1,581	366	1,168	798	972	675	577	417	250	230	88	278	131	43
Basswood	3,105	2,115	432	198	86	72	79	59	26	19	7	9	3	--	--
Elm	73,418	53,415	13,971	3,427	1,410	620	196	169	73	42	29	25	35	6	--
Black walnut	22,281	8,778	4,961	3,572	1,602	1,537	839	517	266	126	41	31	8	3	--
Willow	4,236	2,275	904	316	205	132	147	104	66	40	24	12	10	--	1
Boxelder	7,033	3,507	1,487	948	584	201	164	67	38	26	6	3	2	--	--
Hackberry	42,443	22,043	10,313	3,884	2,257	1,497	896	584	430	241	130	82	67	19	--
Sycamore	2,010	798	449	112	135	73	94	64	93	47	31	39	45	24	6
Other hardwoods	30,305	17,739	7,006	2,560	1,315	724	387	227	154	102	46	25	16	4	--
Total	291,476	154,433	63,186	28,552	16,545	11,039	6,011	4,130	2,737	1,739	1,084	671	979	310	60
All species	299,402	158,863	65,441	29,318	16,859	11,105	6,074	4,152	2,740	1,741	1,089	671	979	310	60

Table 42.--Number of short-log trees on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand trees)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS													
Eastern redcedar	140	67	53	7	--	9	4	--	--	--	--	--	--
Total	140	67	53	7	--	9	4	--	--	--	--	--	--
HARDWOODS													
Bur oak	419	135	32	65	53	24	23	24	6	16	28	11	2
Select white oak	791	217	196	195	92	33	30	11	5	4	7	1	--
Other white oak	581	324	126	69	57	--	3	--	--	--	2	--	--
Select red oak	274	80	62	39	39	35	10	--	4	2	2	1	--
Other red oak	435	136	148	47	71	8	16	7	--	--	2	--	--
Select hickory	252	153	68	6	--	17	2	--	4	2	--	--	--
Other hickory	233	122	55	32	18	4	--	--	--	--	2	--	--
Pecan	65	25	13	--	5	8	3	5	2	4	--	--	--
Hard maple	36	30	--	--	6	--	--	--	--	--	--	--	--
Soft maple	60	--	--	16	19	7	7	3	2	--	5	1	--
Ash	668	164	196	115	48	55	47	18	11	2	12	--	--
Cottonwood	268	--	60	41	107	9	23	5	7	6	4	4	2
Basswood	49	--	--	17	17	3	5	--	4	--	2	1	--
Elm	1,859	957	481	208	90	46	33	16	9	3	13	3	--
Black walnut	860	318	163	161	108	59	28	7	9	5	2	--	--
Willow	91	27	--	27	15	10	4	4	4	--	--	--	--
Boxelder	523	175	120	97	28	28	40	30	5	--	--	--	--
Hackberry	1,354	464	376	148	169	107	41	23	11	7	6	2	--
Sycamore	56	--	46	--	7	--	3	--	--	--	--	--	--
Other hardwoods	2,085	1,081	565	191	96	79	35	13	9	8	6	1	1
Total	10,959	4,408	2,707	1,474	1,045	532	353	166	92	59	93	25	5
All species	11,099	4,475	2,760	1,481	1,045	541	357	166	92	59	93	25	5

Table 43.--Net volume of growing stock and sawtimber on commercial forest land by species group, Kansas, 1965 and 1981

Species group	Growing stock		Sawtimber	
	1965[1]	1981	1965[1]	1981
	Thousand cubic feet		Thousand board feet[2]	
SOFTWOODS				
Eastern redcedar	216	4,591	511	10,871
Total	216	4,591	511	10,871
HARDWOODS				
Bur oak	36,925	60,920	173,124	286,120
Select white oak	11,501	34,121	36,194	107,383
Other white oak	10,484	19,854	19,229	36,531
Select red oak	26,020	45,828	103,966	183,457
Other red oak	19,438	27,445	84,208	118,665
Hickory	13,103	29,081	30,502	67,696
Pecan	8,040	8,986	36,974	28,043
Hard maple	2,259	3,120	5,563	6,280
Soft maple	9,005	21,011	37,644	87,834
Ash	35,714	61,700	107,524	185,760
Cottonwood	101,052	134,292	459,058	610,060
Basswood	3,614	6,031	15,438	25,763
Elm	89,243	30,599	358,279	69,531
Black walnut	36,751	57,868	107,950	169,979
Willow	10,772	11,629	44,370	47,901
Hackberry	48,909	86,674	169,049	299,581
Sycamore	24,613	21,538	125,288	105,631
Other hardwoods	14,941	46,027	38,675	119,143
Total	502,384	706,724	1,953,035	2,555,358
All species	502,600	711,315	1,953,546	2,566,229

[1] Figures have been adjusted from those published after the 1965 survey to conform to 1981 areas because of changes in survey definitions and procedures.

[2] International 1/4-inch rule.

Table 44.--Net volume of all live trees on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS													
Eastern redcedar	5,560	1,757	1,507	555	880	495	165	65	136	--	--	--	--
Total	5,560	1,757	1,507	555	880	495	165	65	136	--	--	--	--
HARDWOODS													
Bur oak	74,323	2,702	2,776	3,714	3,441	4,121	6,020	7,350	7,189	8,217	17,306	9,659	1,828
Select white oak	51,342	6,172	8,006	9,441	7,059	4,882	4,516	3,154	2,573	1,664	3,060	690	125
Other white oak	23,758	5,753	5,035	4,691	2,447	2,530	1,537	1,112	170	231	252	--	--
Select red oak	50,853	2,237	4,375	5,853	7,090	4,566	5,710	4,465	4,779	2,314	6,201	2,729	534
Other red oak	32,530	2,042	3,197	3,148	3,594	3,053	2,703	2,819	2,814	2,710	4,309	1,797	344
Select hickory	19,345	3,617	3,753	3,022	2,133	2,721	1,484	1,634	533	190	258	--	--
Other hickory	13,245	2,768	3,038	3,057	1,837	1,211	312	373	348	175	126	--	--
Pecan	10,586	676	1,036	1,963	1,597	1,187	1,071	667	565	884	456	484	--
Hard maple	3,389	533	1,033	563	549	279	49	43	99	113	--	128	--
Soft maple	24,380	657	1,527	1,621	1,531	2,746	2,478	2,445	2,104	1,815	3,780	2,084	1,592
Ash	74,481	8,696	12,292	10,909	7,291	8,434	6,452	6,441	3,937	2,686	6,802	541	--
Cottonwood	145,155	2,707	4,588	9,618	11,409	13,089	11,941	9,544	11,156	6,362	25,242	21,936	17,563
Basswood	7,565	466	641	929	1,328	1,224	945	658	439	510	247	63	115
Elm	52,613	12,449	9,859	7,109	4,746	4,001	2,691	2,468	2,086	1,715	4,108	1,293	88
Black walnut	68,747	9,982	8,417	12,767	11,299	9,683	7,058	4,238	2,123	1,879	827	474	--
Willow	15,402	783	1,190	1,472	2,520	2,611	1,898	1,792	1,485	634	893	4	120
Boxelder	22,328	3,635	3,634	3,200	3,341	2,261	2,078	1,970	622	652	590	304	41
Hackberry	104,831	10,607	12,300	13,297	13,423	12,380	12,255	9,010	6,749	4,775	6,389	3,646	--
Sycamore	22,924	272	836	813	1,226	1,219	2,592	1,746	1,644	2,268	4,017	4,414	1,877
Other hardwoods	65,918	11,230	11,632	8,701	8,459	6,725	5,846	4,536	2,857	2,037	2,452	1,314	129
Noncommercial species	33,298	9,641	7,383	4,870	4,022	2,059	1,979	1,039	767	516	866	156	--
Total	917,013	97,625	106,548	110,758	100,342	90,982	81,615	67,504	55,039	42,347	88,181	51,716	24,356
All species	922,573	99,382	108,055	111,313	101,222	91,477	81,780	67,569	55,175	42,347	88,181	51,716	24,356

Table 45.--Net volume of timber on commercial forest land by class of timber and softwoods and hardwoods, Kansas, 1981

(In thousand cubic feet)

Class of timber	All species	Softwoods	Hardwoods
LIVE TREES			
Growing-stock trees			
Sawtimber			
Saw log portion	392,254	1,762	390,492
Upper stem portion	98,594	176	98,418
Subtotal	490,848	1,938	488,910
Poletimber	220,467	2,653	217,814
Total growing stock	711,315	4,591	706,724
Cull trees			
Rough and rotten cull trees			
Sawtimber	72,857	221	72,636
Poletimber	70,972	338	70,634
Subtotal	143,829	559	143,270
Short-log trees	67,429	410	67,019
Total cull	211,258	969	210,289
TOTAL LIVE TREES	922,573	5,560	917,013
SALVABLE DEAD TREES	4,448	68	4,380
ALL CLASSES	927,021	5,628	921,393

Table 46.--Net volume of growing-stock, sawtimber, short-log, and rough and rotten trees on commercial forest land by individual species, Kansas, 1981

Species	Total all live	Growing stock	Short-log cull	Rough and rotten cull	Sawtimber
		Thousand cubic feet			Thousand board feet[1/]
Eastern redcedar	5,560	4,591	410	559	10,871
Bur oak	74,323	60,920	6,634	6,769	286,120
White oak	2,988	2,663	243	82	10,136
Chinkapin oak	48,354	31,458	4,632	12,264	97,247
Post oak	23,758	19,854	1,787	2,117	36,531
Northern red oak	50,034	45,152	1,723	3,159	180,754
Shumard oak	819	676	32	111	2,703
Black oak	21,214	18,536	977	1,701	80,893
Blackjack oak	4,519	2,400	1,077	1,042	3,827
Pin oak	6,474	6,186	43	245	33,378
Shingle oak	323	323	--	--	567
Shellbark hickory	1,667	1,481	90	96	2,936
Mockernut hickory	1,752	1,401	155	196	5,741
Shagbark hickory	15,926	14,506	683	737	34,370
Bitternut hickory	12,740	11,270	883	587	23,281
Black hickory	505	423	51	31	1,368
Pecan	10,586	8,986	757	843	28,043
Sugar maple	3,389	3,120	125	144	6,280
Silver maple	24,380	21,011	1,078	2,291	87,834
White ash	2,080	1,641	188	251	4,191
Green ash	72,401	60,059	5,258	7,084	181,569
Eastern cottonwood	145,155	134,292	4,011	6,852	610,060
American basswood	7,565	6,031	734	800	25,763
American elm	41,985	25,366	5,690	10,929	59,400
Siberian elm	1,041	343	264	434	271
Slippery elm	9,587	4,890	2,056	2,641	9,860
Black walnut	68,747	57,868	5,495	5,384	169,979
Black willow	15,402	11,629	821	2,952	47,901
Boxelder	22,328	10,376	3,487	8,465	22,839
Hackberry	104,831	86,674	9,118	9,039	299,581
American sycamore	22,924	21,538	250	1,136	105,631
Black cherry	1,936	1,250	366	320	3,455
Black locust	4,357	2,636	627	1,094	5,293
Honeylocust	27,648	16,555	3,739	7,354	49,897
Kentucky coffeetree	6,771	5,389	424	958	19,474
Northern catalpa	3,092	1,107	358	1,627	2,151
Common persimmon	1,347	1,113	24	210	612
Red mulberry	19,463	6,448	3,119	9,896	11,575
River birch	818	781	--	37	2,278
Sugarberry	399	344	--	55	1,569
Texas buckeye	87	28	20	39	--
All species[2/]	889,275	711,315	67,429	110,531	2,566,229

[1/] International 1/4-inch rule.

[2/] These totals do not include volume for noncommercial species. Volumes for individual noncommercial species are found in Table 47.

Table 47.--Net volume of noncommercial species (nongrowing-stock volume) on commercial forest land by individual species, Kansas, 1981

(In thousand cubic feet)

Species	Nongrowing-stock (rough tree) volume
Ailanthus	136
Eastern redbud	1,329
Hawthorn	63
Osage-orange	30,970
Eastern hophornbeam	800
All species	33,298

Table 48.--Net volume of growing stock on commercial forest land, by species group and Forest Survey Unit, Kansas, 1981

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit: North-eastern Unit	South-eastern Unit	Western Unit
SOFTWOODS				
Eastern redcedar	4,591	2,446	2,112	33
Total	4,591	2,446	2,112	33
HARDWOODS				
Bur oak	60,920	29,902	15,644	15,374
Select white oak	34,121	22,050	12,071	--
Other white oak	19,854	2,107	17,747	--
Select red oak	45,828	25,577	20,251	--
Other red oak	27,445	15,385	12,060	--
Select hickory	17,388	11,801	5,587	--
Other hickory	11,693	6,665	5,028	--
Pecan	8,986	265	8,578	143
Hard maple	3,120	1,938	1,182	--
Soft maple	21,011	10,459	10,552	--
Ash	61,700	13,845	26,734	21,121
Cottonwood	134,292	43,561	9,786	80,945
Basswood	6,031	5,618	413	--
Elm	30,599	13,932	12,589	4,078
Black walnut	57,868	32,366	23,004	2,498
Willow	11,629	5,021	4,204	2,404
Boxelder	10,376	3,563	1,831	4,982
Hackberry	86,674	37,640	38,441	10,593
Sycamore	21,538	11,447	9,787	304
Other hardwoods	35,651	19,505	11,527	4,619
Total	706,724	312,647	247,016	147,061
All species	711,315	315,093	249,128	147,094

Table 49.--Net volume of sawtimber on commercial forest land, by species group and Forest Survey Unit, Kansas, 1981

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit: North-eastern Unit	South-eastern Unit	Western Unit
SOFTWOODS				
Eastern redcedar	10,871	5,106	5,765	--
Total	10,871	5,106	5,765	--
HARDWOODS				
Bur oak	286,120	124,290	72,739	89,091
Select white oak	107,383	77,476	29,907	--
Other white oak	36,531	6,145	30,386	--
Select red oak	183,457	104,284	79,173	--
Other red oak	118,665	70,133	48,532	--
Select hickory	43,047	24,060	18,987	--
Other hickory	24,649	14,453	10,196	--
Pecan	28,043	575	26,708	760
Hard maple	6,280	3,635	2,645	--
Soft maple	87,834	44,464	43,370	--
Ash	185,760	42,154	87,049	56,557
Cottonwood	610,060	196,103	39,358	374,599
Basswood	25,763	24,807	956	--
Elm	69,531	25,507	29,537	14,487
Black walnut	169,979	96,526	65,992	7,461
Willow	47,901	19,065	16,467	12,369
Boxelder	22,839	5,924	6,077	10,838
Hackberry	299,581	112,814	137,513	49,254
Sycamore	105,631	56,268	47,653	1,710
Other hardwoods	96,304	53,824	29,536	12,944
Total	2,555,358	1,102,507	822,781	630,070
All species	2,566,229	1,107,613	828,546	630,070

[1/] International 1/4-inch rule.

Table 50.--Net volume of growing stock on commercial forest land by county and species group, Kansas, 1981

(In thousand cubic feet)

County	All species	Eastern redcedar	Bur oak	Select white oak	Other white oak	Select red oak	Other red oak	Select hickory	Other hickory	Pecan	Hard maple	Soft maple	Ash
						NORTHEASTERN UNIT							
						Species group							
Atchison	15,257	154	1,511	1,319	125	1,558	670	459	305	--	235	366	740
Brown	10,457	132	985	1,194	118	1,372	558	421	266	--	223	173	517
Clay	10,580	49	1,053	471	24	562	221	182	144	--	31	395	527
Dickinson	9,597	54	867	423	23	722	223	179	134	--	51	292	430
Doniphan	14,275	148	1,477	1,110	99	1,607	598	526	266	--	178	446	640
Douglas	12,833	163	840	850	163	1,059	1,327	1,049	498	--	18	310	287
Franklin	11,661	121	996	789	116	935	917	772	377	86	14	391	395
Geary	10,510	52	1,074	724	55	595	475	375	248	--	7	352	438
Jackson	12,804	76	1,314	707	46	883	194	316	150	--	5	791	839
Jefferson	21,868	170	1,607	1,437	215	1,615	2,061	1,391	713	--	12	552	637
Johnson	14,091	135	1,458	1,204	156	1,395	553	419	222	--	188	453	665
Leavenworth	28,197	92	2,572	1,689	145	1,789	2,187	1,038	642	75	2	872	1,076
Marshall	13,713	108	1,391	837	44	1,031	331	373	192	--	84	553	619
Miami	25,539	242	2,645	2,281	180	2,563	964	776	458	64	379	844	1,324
Nemaha	6,733	35	643	374	27	450	105	175	83	--	--	362	451
Osage	17,114	125	1,615	1,229	109	1,290	794	652	379	--	74	483	677
Pottawatomie	22,350	190	2,040	1,496	149	1,630	1,141	911	492	--	115	640	859
Riley	16,697	161	1,648	1,133	97	1,386	713	653	357	--	106	483	666
Shawnee	13,618	98	1,346	971	56	1,142	362	382	254	--	115	481	712
Wabaunsee	17,097	78	1,734	1,030	70	939	597	454	316	--	30	642	811
Washington	5,949	29	715	375	18	402	134	134	94	--	--	453	370
Wyandotte	4,153	34	371	407	72	652	260	164	75	40	71	125	165
All counties	315,093	2,446	29,902	22,050	2,107	25,577	15,385	11,801	6,665	265	1,938	10,459	13,845
						SOUTHEASTERN UNIT							
Allen	5,884	36	528	119	111	276	150	86	105	180	6	351	709
Anderson	7,855	76	597	262	392	519	274	157	130	283	21	376	829
Bourbon	22,505	165	1,078	1,834	2,518	2,665	1,635	741	624	386	212	572	1,776
Butler	13,210	56	777	269	141	684	350	207	180	676	5	863	2,132
Chase	6,451	33	667	110	53	252	141	82	133	151	5	425	765
Chautauqua	23,805	248	1,088	1,173	3,450	2,173	1,439	548	456	1,140	56	805	2,432
Cherokee	10,615	113	511	437	1,033	743	595	170	173	662	30	399	1,289
Coffey	4,132	66	218	198	390	277	248	75	65	241	19	112	369
Cowley	17,562	67	1,148	427	330	954	406	435	272	502	13	1,150	2,392
Crawford	13,088	110	1,047	516	539	1,018	388	217	220	398	56	630	1,490
Elk	14,054	131	645	634	1,332	1,278	731	325	257	651	45	561	1,622
Greenwood	13,017	102	1,240	265	341	641	362	153	223	412	13	651	1,382
Labette	7,380	98	364	363	803	535	450	141	123	448	31	245	804
Linn	30,993	308	2,022	2,369	1,882	3,385	1,946	779	860	645	355	1,027	2,713
Lyon	8,015	24	699	210	103	405	183	204	148	109	11	507	964
Marion	4,533	23	238	126	158	292	124	111	62	213	3	269	660
Montgomery	13,509	176	959	932	863	1,289	710	361	290	319	136	487	1,196
Morris	4,669	29	405	148	117	284	92	108	78	81	12	276	531
Neosho	6,724	70	327	302	755	491	393	123	117	387	18	233	750
Wilson	15,578	103	801	1,111	1,849	1,698	1,106	462	419	374	113	449	1,394
Woodson	5,549	78	285	266	587	392	337	102	93	320	22	164	635
All counties	249,128	2,112	15,644	12,071	17,747	20,251	12,060	5,587	5,028	8,578	1,182	10,552	26,734

(Table 50 continued on next page)

(Table 50 continued)

County	Species group								
	Cotton-wood	Bass-wood	Elm	Black walnut	Willow	Boxelder	Hackberry	Sycamore	Other hardwoods
NORTHEASTERN UNIT									
Atchison	1,792	299	529	1,430	151	133	2,112	614	755
Brown	517	168	345	1,075	90	130	1,177	420	576
Clay	2,301	219	381	956	175	100	1,745	481	563
Dickinson	2,061	211	348	864	194	95	1,509	473	444
Doniphan	1,307	344	533	1,568	222	165	1,740	446	855
Douglas	967	206	809	1,430	318	128	1,111	444	856
Franklin	1,016	180	626	1,383	159	132	1,091	319	846
Geary	1,790	170	447	1,164	115	69	1,333	363	664
Jackson	2,022	132	637	1,298	205	334	1,447	133	1,275
Jefferson	2,910	295	1,238	2,453	332	164	1,788	900	1,378
Johnson	1,326	341	545	1,418	175	173	1,924	584	757
Leavenworth	6,126	326	1,468	2,924	169	127	1,994	1,232	1,652
Marshall	2,060	300	650	1,335	396	221	1,812	485	891
Miami	2,347	560	963	2,517	252	318	3,476	972	1,414
Nemaha	1,123	69	310	708	97	195	774	60	692
Osage	2,446	268	737	1,780	423	181	2,158	712	982
Pottawatomie	2,993	440	941	2,167	673	262	3,085	881	1,245
Riley	2,292	344	699	1,693	287	187	2,149	615	1,028
Shawnee	1,896	284	517	1,357	260	179	1,862	458	886
Wabaunsee	3,296	273	751	1,725	231	157	2,274	621	1,068
Washington	871	49	318	629	62	88	619	95	494
Wyandotte	102	140	140	492	35	25	460	139	184
All counties	43,561	5,618	13,932	32,366	5,021	3,563	37,640	11,447	19,505
SOUTHEASTERN UNIT									
Allen	347	4	263	530	134	54	1,334	259	302
Anderson	392	8	394	731	148	65	1,491	302	408
Bourbon	440	59	1,089	2,022	129	165	2,682	794	919
Butler	701	7	775	1,197	401	107	2,297	709	676
Chase	377	3	233	527	142	56	1,659	296	341
Chautauqua	563	64	1,358	2,240	359	104	2,221	774	1,114
Cherokee	540	25	648	1,115	265	42	1,033	348	444
Coffey	264	12	252	492	93	20	445	103	173
Cowley	617	8	973	1,517	379	219	3,797	992	964
Crawford	689	9	606	1,178	254	111	2,490	541	581
Elk	490	25	817	1,308	254	82	1,611	529	726
Greenwood	1,005	12	605	1,231	299	125	2,847	469	639
Labette	315	19	435	801	160	27	696	223	299
Linn	1,109	54	1,221	2,723	320	156	4,720	1,101	1,298
Lyon	289	4	370	658	135	122	1,998	441	431
Marion	177	3	278	397	112	44	758	236	249
Montgomery	349	19	571	1,244	141	114	2,250	532	571
Morris	183	2	208	396	80	60	1,107	238	234
Neosho	313	18	404	710	149	28	652	209	275
Wilson	322	42	753	1,368	130	105	1,784	541	654
Woodson	304	16	336	619	120	25	569	150	229
All counties	9,786	413	12,589	23,004	4,204	1,831	38,441	9,787	11,527

(Table 50 continued on next page)

(Table 50 continued)

WESTERN UNIT

County	All species	Species group											
		Eastern redcedar	Bur oak	Select white oak	Other white oak	Select red oak	Other red oak	Select hickory	Other hickory	Pecan	Hard maple	Soft maple	Ash
Barber	5,793	--	558	--	--	--	--	--	--	--	--	--	627
Barton	853	--	114	--	--	--	--	--	--	--	--	--	150
Cheyenne	2,109	--	262	--	--	--	--	--	--	--	--	--	263
Clark	4,226	--	149	--	--	--	--	--	--	--	--	--	800
Cloud	7,886	--	1,037	--	--	--	--	--	--	--	--	--	676
Comanche	668	--	51	--	--	--	--	--	--	--	--	--	220
Decatur	1,527	--	223	--	--	--	--	--	--	--	--	--	208
Edwards	1,616	--	81	--	--	--	--	--	--	--	--	--	103
Ellis	1,924	--	261	--	--	--	--	--	--	--	--	--	268
Ellsworth	2,438	--	374	--	--	--	--	--	--	--	--	--	284
Finney	208	--	14	--	--	--	--	--	--	--	--	--	74
Ford	381	--	34	--	--	--	--	--	--	--	--	--	111
Gove	120	--	17	--	--	--	--	--	--	--	--	--	11
Graham	3,520	--	459	--	--	--	--	--	--	--	--	--	495
Grant	85	--	--	--	--	--	--	--	--	--	--	--	27
Gray	1,218	--	21	--	--	--	--	--	--	--	--	--	135
Greeley	20	--	--	--	--	--	--	--	--	--	--	--	--
Hamilton	1,940	6	135	--	--	--	--	--	--	--	--	--	747
Harper	3,857	--	352	--	--	--	--	--	--	--	--	--	676
Harvey	1,095	--	108	--	--	--	--	--	--	--	--	--	241
Haskell	--	--	--	--	--	--	--	--	--	--	--	--	--
Hodgeman	--	--	--	--	--	--	--	--	--	--	--	--	--
Jewell	6,175	--	545	--	--	--	--	--	--	--	--	--	990
Kearny	253	--	--	--	--	--	--	--	--	--	--	--	7
Kingman	6,624	--	557	--	--	--	--	--	--	--	--	--	1,099
Kiowa	216	6	13	--	--	--	--	--	--	--	--	--	27
Lane	46	--	7	--	--	--	--	--	--	--	--	--	12
Lincoln	2,454	--	285	--	--	--	--	--	--	--	--	--	305
Logan	608	6	85	--	--	--	--	--	--	--	--	--	98
McPherson	3,338	--	327	--	--	--	--	--	--	--	--	--	285
Meade	1,349	--	82	--	--	--	--	--	--	--	--	--	283
Mitchell	5,770	--	718	--	--	--	--	--	--	--	--	--	986
Morton	1,329	5	124	--	--	--	--	--	--	--	--	--	263
Ness	323	--	68	--	--	--	--	--	--	--	--	--	44
Norton	1,894	--	266	--	--	--	--	--	--	--	--	--	355
Osborne	5,334	--	714	--	--	--	--	--	--	--	--	--	657
Ottawa	5,503	--	732	--	--	--	--	--	--	--	--	--	929
Pawnee	1,280	--	93	--	--	--	--	--	--	--	--	--	185
Phillips	4,304	--	399	--	--	--	--	--	--	--	--	--	764
Pratt	1,538	--	103	--	--	--	--	--	--	--	--	--	130
Rawlins	1,461	--	228	--	--	--	--	--	--	--	--	--	195
Reno	5,515	--	512	--	--	--	--	--	--	--	--	--	978
Republic	6,077	--	498	--	--	--	--	--	--	--	--	--	751
Rice	1,748	--	99	--	--	--	--	--	--	--	--	--	105
Rooks	5,649	--	553	--	--	--	--	--	--	--	--	--	827
Rush	91	--	13	--	--	--	--	--	--	--	--	--	23
Russell	3,592	--	451	--	--	--	--	--	--	--	--	--	340

(Table 50 continued on next page)

(Table 50 continued)

WESTERN UNIT

County	Species group								
	Cotton-wood	Bass-wood	Elm	Black walnut	Willow	Boxelder	Hackberry	Sycamore	Other hardwoods
Barber	3,560	--	134	73	99	186	400	5	151
Barton	360	--	25	18	24	42	92	--	28
Cheyenne	1,072	--	66	37	44	92	206	3	64
Clark	2,782	--	49	35	39	92	223	--	57
Cloud	4,360	--	273	180	132	257	676	20	275
Comanche	259	--	15	10	11	37	49	--	16
Decatur	684	--	51	30	41	71	164	1	54
Edwards	1,228	--	63	11	17	29	61	--	23
Ellis	878	--	60	43	54	90	196	1	73
Ellsworth	1,157	--	77	52	45	97	252	8	92
Finney	84	--	5	--	3	7	18	--	3
Ford	146	--	12	7	8	27	24	--	12
Gove	58	--	3	4	3	6	14	--	4
Graham	1,723	--	111	63	74	148	318	7	122
Grant	46	--	--	3	--	7	--	--	2
Gray	1,008	--	8	--	5	11	26	--	4
Greeley	20	--	--	--	--	--	--	--	--
Hamilton	700	--	43	10	32	72	161	--	34
Harper	2,040	--	96	80	73	143	248	8	141
Harvey	516	--	40	7	24	54	76	--	29
Haskell	--	--	--	--	--	--	--	--	--
Hodgeman	--	--	--	--	--	--	--	--	--
Jewell	3,377	--	156	70	124	221	536	1	155
Kearny	226	--	--	--	--	--	20	--	--
Kingman	3,691	--	168	158	108	224	329	20	270
Kiowa	135	--	5	--	3	5	19	--	3
Lane	15	--	2	--	2	2	5	--	1
Lincoln	1,273	--	72	55	51	111	218	3	81
Logan	263	--	21	12	15	26	56	1	25
McPherson	2,068	--	94	61	54	111	243	4	91
Meade	752	--	27	18	20	40	101	--	26
Mitchell	2,785	--	157	136	85	233	403	24	243
Morton	647	--	40	14	32	52	115	--	37
Ness	126	--	13	7	3	10	33	3	16
Norton	786	--	72	27	48	90	179	3	68
Osborne	2,810	--	155	87	91	183	436	16	185
Ottawa	2,565	--	154	131	99	195	427	24	247
Pawnee	774	--	28	13	20	47	93	--	27
Phillips	2,168	--	111	95	100	203	307	3	154
Pratt	1,075	--	39	18	21	38	86	--	28
Rawlins	637	--	49	31	37	66	159	3	56
Reno	2,960	--	137	121	89	191	290	17	220
Republic	3,743	--	166	60	106	180	440	1	132
Rice	1,363	--	39	14	10	28	57	3	30
Rooks	3,250	--	136	78	82	183	363	12	165
Rush	30	--	5	--	3	5	9	--	3
Russell	1,990	--	115	67	67	124	319	7	112

(Table 50 continued on next page)

(Table 50 continued)

WESTERN UNIT

County	All species	Species group: Eastern redcedar	Bur oak	Select white oak	Other white oak	Select red oak	Other red oak	Select hickory	Other hickory	Pecan	Hard maple	Soft maple	Ash
Saline	2,507	--	379	--	--	--	--	--	--	--	--	--	334
Scott	102	--	26	--	--	--	--	--	--	--	--	--	17
Sedgwick	5,687	--	785	--	--	--	--	--	--	44	--	--	947
Seward	1,565	--	138	--	--	--	--	--	--	--	--	--	224
Sheridan	997	--	113	--	--	--	--	--	--	--	--	--	107
Sherman	--	--	--	--	--	--	--	--	--	--	--	--	--
Smith	2,513	--	315	--	--	--	--	--	--	--	--	--	388
Stafford	3,904	10	101	--	--	--	--	--	--	--	--	--	153
Stanton	10	--	--	--	--	--	--	--	--	--	--	--	--
Stevens	425	--	61	--	--	--	--	--	--	--	--	--	68
Sumner	13,787	--	1,596	--	--	--	--	--	--	99	--	--	1,850
Thomas	522	--	17	--	--	--	--	--	--	--	--	--	11
Trego	1,044	--	121	--	--	--	--	--	--	--	--	--	241
Wallace	76	--	--	--	--	--	--	--	--	--	--	--	27
Wichita	--	--	--	--	--	--	--	--	--	--	--	--	--
All counties	147,094	33	15,374	--	--	--	--	--	--	143	--	--	21,121
All units	711,315	4,591	60,920	34,121	19,854	45,828	27,445	17,388	11,693	8,986	3,120	21,011	61,700

(Table 50 continued)

(Table 50 continued)

WESTERN UNIT

County	Species group: Cotton-wood	Bass-wood	Elm	Black walnut	Willow	Boxelder	Hackberry	Sycamore	Other hardwoods
Saline	1,152	--	87	60	46	105	237	8	99
Scott	33	--	5	2	--	2	10	1	6
Sedgwick	2,615	--	166	140	86	206	396	31	271
Seward	850	--	36	34	37	66	131	--	49
Sheridan	564	--	25	19	21	35	79	1	33
Sherman	--	--	--	--	--	--	--	--	--
Smith	1,187	--	79	39	66	112	250	--	77
Stafford	3,371	--	59	21	21	50	78	--	40
Stanton	10	--	--	--	--	--	--	--	--
Stevens	177	--	16	7	13	21	47	--	15
Sumner	7,845	--	481	212	98	291	833	61	421
Thomas	458	--	3	4	3	6	14	--	6
Trego	456	--	29	21	15	45	71	4	41
Wallace	37	--	--	3	--	7	--	--	2
Wichita	--	--	--	--	--	--	--	--	--
All counties	80,945	--	4,078	2,498	2,404	4,982	10,593	304	4,619
All units	134,292	6,031	30,599	57,868	11,629	10,376	86,674	21,538	35,651

Table 51.--Net volume of sawtimber on commercial forest land by county and species group, Kansas, 1981

(In thousand board feet)[1/]

County	All species	Eastern redcedar	Bur oak	Select white oak	Other white oak	Select red oak	Other red oak	Select hickory	Other hickory	Pecan	Hard maple	Soft maple	Ash
		Species group											
NORTHEASTERN UNIT													
Atchison	54,573	366	6,083	4,934	246	6,233	2,964	1,196	864	--	417	1,463	2,252
Brown	36,117	296	3,781	4,463	227	5,619	2,541	1,116	748	--	381	759	1,636
Clay	39,325	118	4,730	1,806	64	2,107	907	489	343	--	81	1,472	1,610
Dickinson	35,993	132	3,752	1,524	52	2,929	859	554	492	--	114	1,087	1,242
Doniphan	49,986	295	6,220	3,694	251	6,603	2,704	1,382	1,029	--	351	1,833	1,882
Douglas	42,640	268	3,111	2,890	629	5,120	6,583	1,467	667	--	--	1,455	515
Franklin	38,529	214	3,949	2,634	439	4,205	4,534	1,133	508	184	--	1,817	1,076
Geary	36,690	108	4,473	2,523	177	2,373	2,238	687	428	--	14	1,446	1,315
Jackson	43,704	185	5,918	1,928	229	2,659	956	405	82	--	4	3,744	2,978
Jefferson	74,959	276	5,903	5,037	786	7,190	9,657	2,127	1,015	--	--	2,506	1,541
Johnson	49,515	290	6,286	4,305	329	5,781	2,376	1,227	735	--	376	1,715	2,033
Leavenworth	102,048	172	9,657	6,143	418	7,288	9,004	1,838	1,027	161	--	4,046	3,276
Marshall	48,596	205	6,316	2,969	128	4,300	1,532	955	503	--	194	2,237	1,939
Miami	90,212	560	11,131	8,514	362	10,300	4,383	2,243	1,508	138	738	3,393	4,267
Nemaha	23,062	75	2,941	980	141	1,453	509	198	17	--	--	1,626	1,473
Osage	59,394	268	6,721	4,320	329	4,948	3,717	1,256	642	--	112	2,018	2,002
Pottawatomie	78,642	399	8,642	5,317	481	6,792	5,365	1,686	971	--	204	2,538	2,394
Riley	58,691	316	7,011	3,953	292	5,651	3,327	1,290	730	--	180	1,940	1,856
Shawnee	48,657	209	5,842	3,476	130	4,536	1,612	1,095	926	--	241	1,933	2,320
Wabaunsee	60,783	181	7,414	3,715	208	3,554	2,678	901	514	--	66	2,649	2,565
Washington	20,775	95	3,039	1,239	60	1,740	626	236	114	--	--	2,285	1,535
Wyandotte	14,722	78	1,370	1,112	167	2,903	1,061	579	590	92	162	502	447
All counties	1,107,613	5,106	124,290	77,476	6,145	104,284	70,133	24,060	14,453	575	3,635	44,464	42,154
SOUTHEASTERN UNIT													
Allen	21,738	92	2,647	362	152	1,042	633	328	307	573	16	1,596	2,344
Anderson	27,000	249	2,891	752	514	2,036	1,000	575	343	896	55	1,640	2,647
Bourbon	71,539	396	4,404	4,255	4,524	10,508	7,495	2,413	937	1,433	440	1,998	5,348
Butler	46,894	105	4,001	758	294	2,578	1,380	895	384	1,648	11	3,518	7,694
Chase	24,968	63	3,390	345	122	911	711	265	419	504	11	2,034	2,512
Chautauqua	67,063	624	4,452	3,105	5,223	8,925	3,804	1,537	737	3,158	153	3,066	7,863
Cherokee	31,617	362	2,188	1,184	1,572	3,006	1,708	468	322	2,013	83	1,500	4,260
Coffey	12,314	226	901	556	627	1,114	768	202	153	896	52	388	1,080
Cowley	63,884	146	5,837	1,120	561	3,509	1,605	2,083	602	1,349	33	4,610	8,511
Crawford	46,381	279	5,111	1,182	961	3,925	1,734	753	597	1,234	115	2,797	4,666
Elk	43,253	309	2,879	1,669	2,117	5,170	2,539	1,066	400	1,662	104	2,154	5,507
Greenwood	46,996	261	6,025	886	418	2,550	1,526	471	703	1,501	34	2,976	4,171
Labette	21,649	341	1,531	976	1,234	2,145	1,282	398	235	1,455	88	920	2,606
Linn	108,858	872	9,424	5,203	4,319	12,957	10,506	2,409	1,684	2,443	741	4,601	8,340
Lyon	30,369	39	3,492	564	220	1,461	919	923	364	368	24	2,128	3,303
Marion	15,386	64	1,188	360	241	1,113	406	428	114	497	7	1,048	2,352
Montgomery	46,711	572	4,488	2,014	1,877	4,805	3,312	1,327	634	1,311	303	2,067	3,686
Morris	17,333	68	2,024	357	241	1,035	413	441	222	283	24	1,192	1,731
Neosho	19,672	223	1,361	830	1,129	1,999	1,102	317	217	1,211	52	868	2,412
Wilson	48,604	208	3,327	2,699	3,127	6,802	4,691	1,408	625	1,148	236	1,683	4,392
Woodson	16,317	266	1,178	730	913	1,582	998	280	197	1,125	63	586	1,624
All counties	828,546	5,765	72,739	29,907	30,386	79,173	48,532	18,987	10,196	26,708	2,645	43,370	87,049

(Table 51 continued on next page)

[1/] International 1/4-inch rule.

(Table 51 continued)

County	Species group								
	Cotton-wood	Bass-wood	Elm	Black walnut	Willow	Boxelder	Hackberry	Sycamore	Other hardwoods
NORTHEASTERN UNIT									
Atchison	8,305	1,335	1,073	4,589	510	129	6,462	2,993	2,159
Brown	2,220	708	592	3,191	395	160	3,475	2,047	1,762
Clay	10,634	1,048	838	3,097	568	124	5,475	2,264	1,550
Dickinson	9,590	986	755	2,930	713	64	4,716	2,183	1,319
Doniphan	5,429	1,536	1,000	5,042	622	269	5,271	2,130	2,443
Douglas	4,079	850	1,519	3,784	1,535	177	3,242	2,333	2,416
Franklin	4,187	738	1,125	3,725	748	262	3,174	1,674	2,203
Geary	7,606	717	905	3,527	407	112	4,036	1,780	1,818
Jackson	9,697	662	940	3,475	904	900	4,132	730	3,176
Jefferson	13,421	1,140	2,174	6,745	1,530	269	5,049	4,673	3,920
Johnson	5,521	1,579	1,185	4,368	499	174	5,960	2,643	2,133
Leavenworth	29,964	1,152	2,003	8,475	612	258	5,490	6,509	4,555
Marshall	8,787	1,409	1,135	4,078	1,240	311	5,486	2,309	2,563
Miami	10,034	2,567	1,742	7,787	813	377	10,601	4,735	4,019
Nemaha	5,519	362	512	1,893	472	549	2,280	326	1,736
Osage	10,789	1,164	1,521	5,255	1,646	307	6,399	3,382	2,598
Pottawatomie	13,621	1,999	1,929	6,478	2,506	415	9,320	4,270	3,315
Riley	10,314	1,541	1,304	5,157	1,165	251	6,633	2,956	2,824
Shawnee	8,034	1,299	969	4,207	969	299	5,732	2,197	2,631
Wabaunsee	14,466	1,211	1,537	5,214	798	285	6,916	3,039	2,872
Washington	3,657	190	374	1,729	293	210	1,614	535	1,204
Wyandotte	229	614	375	1,780	120	22	1,351	560	608
All counties	196,103	24,807	25,507	96,526	19,065	5,924	112,814	56,268	53,824
SOUTHEASTERN UNIT									
Allen	1,341	2	671	1,702	488	154	5,200	1,362	726
Anderson	1,522	12	934	2,105	547	202	5,656	1,556	868
Bourbon	1,935	216	2,500	5,887	525	619	9,119	3,674	2,913
Butler	2,854	1	1,822	3,558	1,661	362	8,109	3,475	1,786
Chase	1,457	1	625	1,875	512	135	6,649	1,590	837
Chautauqua	2,431	36	2,892	5,139	1,560	348	6,307	3,451	2,252
Cherokee	2,096	15	1,453	2,755	1,028	137	3,009	1,512	946
Coffey	954	9	615	1,213	303	67	1,405	452	333
Cowley	2,551	8	2,628	4,781	1,581	778	13,720	5,130	2,741
Crawford	2,697	21	1,405	3,774	934	346	9,595	2,763	1,492
Elk	2,059	46	1,733	3,235	1,073	291	5,207	2,447	1,586
Greenwood	3,741	5	1,519	3,782	930	368	11,252	2,486	1,391
Labette	1,232	16	987	1,918	637	87	1,975	973	613
Linn	4,558	318	2,667	8,671	1,235	449	18,265	5,260	3,936
Lyon	1,187	12	1,070	2,231	531	427	7,488	2,360	1,258
Marion	736	1	662	1,158	472	161	2,591	1,166	621
Montgomery	1,484	90	1,411	3,793	590	393	8,224	2,683	1,647
Morris	729	1	579	1,346	302	201	4,215	1,271	658
Neosho	1,208	9	915	1,762	571	90	1,900	910	586
Wilson	1,461	126	1,654	3,807	566	379	5,903	2,474	1,888
Woodson	1,125	11	795	1,500	421	83	1,724	658	458
All counties	39,358	956	29,537	65,992	16,467	6,077	137,513	47,653	29,536

(Table 51 continued on next page)

(Table 51 continued)

WESTERN UNIT

County	All species	Species group: Eastern redcedar	Bur oak	Select white oak	Other white oak	Select red oak	Other red oak	Select hickory	Other hickory	Pecan	Hard maple	Soft maple	Ash
Barber	24,420	--	3,286	--	--	--	--	--	--	--	--	--	2,098
Barton	3,602	--	682	--	--	--	--	--	--	--	--	--	384
Cheyenne	9,479	--	1,546	--	--	--	--	--	--	--	--	--	926
Clark	16,070	--	894	--	--	--	--	--	--	--	--	--	862
Cloud	35,800	--	6,038	--	--	--	--	--	--	--	--	--	2,585
Comanche	2,343	--	301	--	--	--	--	--	--	--	--	--	432
Decatur	6,682	--	1,325	--	--	--	--	--	--	--	--	--	731
Edwards	7,701	--	485	--	--	--	--	--	--	--	--	--	344
Ellis	8,415	--	1,554	--	--	--	--	--	--	--	--	--	870
Ellsworth	11,295	--	2,171	--	--	--	--	--	--	--	--	--	1,050
Finney	644	--	81	--	--	--	--	--	--	--	--	--	101
Ford	1,432	--	199	--	--	--	--	--	--	--	--	--	342
Gove	564	--	102	--	--	--	--	--	--	--	--	--	40
Graham	15,315	--	2,689	--	--	--	--	--	--	--	--	--	1,652
Grant	331	--	--	--	--	--	--	--	--	--	--	--	77
Gray	4,729	--	121	--	--	--	--	--	--	--	--	--	165
Greeley	64	--	--	--	--	--	--	--	--	--	--	--	--
Hamilton	5,824	--	799	--	--	--	--	--	--	--	--	--	928
Harper	15,991	--	2,025	--	--	--	--	--	--	--	--	--	1,459
Harvey	4,100	--	642	--	--	--	--	--	--	--	--	--	758
Haskell	--	--	--	--	--	--	--	--	--	--	--	--	--
Hodgeman	--	--	--	--	--	--	--	--	--	--	--	--	--
Jewell	25,053	--	3,234	--	--	--	--	--	--	--	--	--	2,550
Kearny	1,100	--	--	--	--	--	--	--	--	--	--	--	--
Kingman	27,313	--	3,139	--	--	--	--	--	--	--	--	--	2,410
Kiowa	850	--	79	--	--	--	--	--	--	--	--	--	74
Lane	165	--	39	--	--	--	--	--	--	--	--	--	37
Lincoln	11,408	--	1,691	--	--	--	--	--	--	--	--	--	1,031
Logan	2,564	--	497	--	--	--	--	--	--	--	--	--	306
McPherson	16,099	--	1,932	--	--	--	--	--	--	--	--	--	998
Meade	5,462	--	496	--	--	--	--	--	--	--	--	--	356
Mitchell	25,013	--	4,064	--	--	--	--	--	--	--	--	--	2,837
Morton	5,120	--	736	--	--	--	--	--	--	--	--	--	633
Ness	1,520	--	381	--	--	--	--	--	--	--	--	--	171
Norton	7,736	--	1,556	--	--	--	--	--	--	--	--	--	1,149
Osborne	23,232	--	4,119	--	--	--	--	--	--	--	--	--	2,272
Ottawa	23,652	--	4,153	--	--	--	--	--	--	--	--	--	2,324
Pawnee	5,247	--	552	--	--	--	--	--	--	--	--	--	561
Phillips	17,710	--	2,360	--	--	--	--	--	--	--	--	--	2,036
Pratt	7,272	--	618	--	--	--	--	--	--	--	--	--	317
Rawlins	6,524	--	1,343	--	--	--	--	--	--	--	--	--	699
Reno	22,406	--	2,891	--	--	--	--	--	--	--	--	--	2,254
Republic	26,475	--	2,962	--	--	--	--	--	--	--	--	--	1,995
Rice	8,136	--	568	--	--	--	--	--	--	--	--	--	366
Rooks	23,373	--	3,188	--	--	--	--	--	--	--	--	--	2,240
Rush	329	--	79	--	--	--	--	--	--	--	--	--	74
Russell	17,278	--	2,649	--	--	--	--	--	--	--	--	--	1,245

(Table 51 continued on next page)

(Table 51 continued)

WESTERN UNIT

County	Species group								
	Cotton-wood	Bass-wood	Elm	Black walnut	Willow	Boxelder	Hackberry	Sycamore	Other hardwoods
Barber	15,259	--	415	192	473	386	1,827	30	454
Barton	1,719	--	77	40	112	102	393	--	93
Cheyenne	5,090	--	256	86	210	282	856	14	213
Clark	11,764	--	182	89	204	196	1,744	--	135
Cloud	20,618	--	1,111	517	628	759	2,588	114	842
Comanche	1,105	--	43	39	51	31	300	--	41
Decatur	3,156	--	158	69	195	174	684	8	182
Edwards	6,147	--	215	37	82	55	271	--	65
Ellis	4,165	--	192	106	271	218	811	8	220
Ellsworth	5,746	--	284	129	216	296	1,055	45	303
Finney	258	--	13	--	14	5	161	--	11
Ford	638	--	33	31	35	13	114	--	27
Gove	300	--	10	8	16	18	56	--	14
Graham	7,992	--	377	168	368	354	1,300	37	378
Grant	239	--	--	15	--	--	--	--	--
Gray	4,176	--	20	--	21	8	202	--	16
Greeley	64	--	--	--	--	--	--	--	--
Hamilton	2,482	--	122	27	156	80	1,119	--	111
Harper	9,683	--	385	253	425	342	1,043	46	330
Harvey	1,958	--	105	31	113	43	365	--	85
Haskell	--	--	--	--	--	--	--	--	--
Hodgeman	--	--	--	--	--	--	--	--	--
Jewell	12,891	--	462	194	619	379	4,259	8	457
Kearny	703	--	--	--	--	--	397	--	--
Kingman	17,522	--	732	561	684	441	1,162	114	548
Kiowa	415	--	13	--	14	5	239	--	11
Lane	45	--	6	--	7	3	23	--	5
Lincoln	6,612	--	258	147	249	284	884	15	237
Logan	1,218	--	68	32	79	56	229	7	72
McPherson	10,841	--	331	153	263	320	966	23	272
Meade	3,490	--	86	43	100	83	736	--	72
Mitchell	13,858	--	587	459	480	428	1,548	135	617
Morton	2,415	--	117	38	164	81	829	--	107
Ness	674	--	45	20	16	29	115	15	54
Norton	3,343	--	215	76	236	154	776	15	216
Osborne	12,841	--	510	238	446	421	1,718	88	579
Ottawa	12,643	--	569	407	570	429	1,778	134	645
Pawnee	2,997	--	77	46	93	59	788	--	74
Phillips	10,058	--	384	301	540	374	1,279	15	363
Pratt	5,532	--	121	41	101	100	357	--	85
Rawlins	3,059	--	157	73	176	169	648	15	185
Reno	13,769	--	525	431	539	290	1,132	97	478
Republic	16,771	--	495	144	511	367	2,812	8	410
Rice	6,625	--	122	44	47	52	218	15	79
Rooks	14,395	--	465	239	418	362	1,538	67	461
Rush	88	--	13	--	14	5	45	--	11
Russell	10,372	--	374	159	319	342	1,414	37	367

(Table 51 continued on next page)

(Table 51 continued)

WESTERN UNIT

County	All species	Species group: Eastern redcedar	Bur oak	Select white oak	Other white oak	Select red oak	Other red oak	Select hickory	Other hickory	Pecan	Hard maple	Soft maple	Ash
Saline	11,252	--	2,194	--	--	--	--	--	--	--	--	--	1,194
Scott	478	--	140	--	--	--	--	--	--	--	--	--	65
Sedgwick	24,861	--	4,393	--	--	--	--	--	--	236	--	--	2,724
Seward	6,722	--	833	--	--	--	--	--	--	--	--	--	531
Sheridan	4,337	--	662	--	--	--	--	--	--	--	--	--	351
Sherman	--	--	--	--	--	--	--	--	--	--	--	--	--
Smith	10,516	--	1,881	--	--	--	--	--	--	--	--	--	1,182
Stafford	17,554	--	603	--	--	--	--	--	--	--	--	--	500
Stanton	33	--	--	--	--	--	--	--	--	--	--	--	--
Stevens	1,800	--	364	--	--	--	--	--	--	--	--	--	231
Sumner	59,976	--	8,970	--	--	--	--	--	--	524	--	--	4,329
Thomas	2,184	--	102	--	--	--	--	--	--	--	--	--	40
Trego	4,218	--	683	--	--	--	--	--	--	--	--	--	594
Wallace	301	--	--	--	--	--	--	--	--	--	--	--	77
Wichita	--	--	--	--	--	--	--	--	--	--	--	--	--
All counties	630,070	--	89,091	--	--	--	--	--	--	760	--	--	56,557
All units	2,566,229	10,871	286,120	107,383	36,531	183,457	118,665	43,047	24,649	28,043	6,280	87,834	185,760

(Table 51 continued)

(Table 51 continued)

WESTERN UNIT

County	Species group: Cotton-wood	Bass-wood	Elm	Black walnut	Willow	Boxelder	Hackberry	Sycamore	Other hardwoods
Saline	5,630	--	323	177	218	246	918	46	306
Scott	186	--	18	6	--	5	30	8	20
Sedgwick	13,145	--	617	476	514	376	1,521	173	686
Seward	3,999	--	144	88	192	189	620	--	126
Sheridan	2,580	--	82	48	105	89	317	8	95
Sherman	--	--	--	--	--	--	--	--	--
Smith	5,156	--	235	86	314	247	1,159	--	256
Stafford	15,612	--	177	62	100	84	334	--	82
Stanton	33	--	--	--	--	--	--	--	--
Stevens	784	--	46	16	61	47	202	--	49
Sumner	37,459	--	2,006	717	491	888	2,968	342	1,282
Thomas	1,921	--	10	8	16	18	55	--	14
Trego	2,150	--	99	78	83	54	351	23	103
Wallace	208	--	--	16	--	--	--	--	--
Wichita	--	--	--	--	--	--	--	--	--
All counties	374,599	--	14,487	7,461	12,369	10,838	49,254	1,710	12,944
All units	610,060	25,763	69,531	169,979	47,901	22,839	299,581	105,631	96,304

Table 52.--Net volume of growing stock on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS													
Eastern redcedar	4,591	1,439	1,215	477	839	324	96	65	136	--	--	--	--
Total	4,591	1,439	1,215	477	839	324	96	65	136	--	--	--	--
HARDWOODS													
Bur oak	60,920	2,198	2,324	3,154	2,604	3,405	5,089	6,032	6,287	6,816	14,098	7,866	1,047
Select white oak	34,121	3,307	4,442	5,893	4,970	3,837	3,537	2,306	1,953	1,115	2,167	594	--
Other white oak	19,854	4,750	4,281	4,011	1,742	2,316	1,308	944	157	196	149	--	--
Select red oak	45,828	1,941	4,117	5,293	6,283	3,784	5,274	4,211	4,274	1,959	5,859	2,421	412
Other red oak	27,445	1,576	2,374	2,814	2,622	2,701	2,195	2,451	2,626	2,554	3,898	1,541	93
Select hickory	17,388	3,214	3,457	2,915	1,943	2,259	1,378	1,517	411	89	205	--	--
Other hickory	11,693	2,491	2,589	2,806	1,440	1,159	312	373	348	175	--	--	--
Pecan	8,986	488	1,004	1,785	1,337	973	909	473	397	751	385	484	--
Hard maple	3,120	484	928	538	459	279	49	43	99	113	--	128	--
Soft maple	21,011	485	1,432	1,263	1,223	2,418	2,280	2,252	1,912	1,684	3,312	1,555	1,195
Ash	61,700	6,832	10,408	9,328	5,756	6,807	5,240	5,475	3,276	2,333	5,709	536	--
Cottonwood	134,292	2,596	4,036	9,107	10,066	12,328	11,475	9,290	10,605	5,880	24,423	20,287	14,199
Basswood	6,031	399	392	587	1,084	1,111	769	592	292	510	179	--	116
Elm	30,599	6,595	5,638	4,192	2,243	2,720	1,645	1,437	1,242	1,284	2,577	942	84
Black walnut	57,868	8,104	6,807	10,891	9,541	8,487	6,036	3,835	1,536	1,596	574	461	--
Willow	11,629	509	882	984	1,729	1,996	1,653	1,424	1,022	553	757	--	120
Boxelder	10,376	1,836	2,027	1,495	1,890	1,081	713	771	258	222	83	--	--
Hackberry	86,674	8,452	9,246	10,782	10,624	10,137	10,498	7,995	5,698	4,246	5,800	3,196	--
Sycamore	21,538	213	619	634	1,129	1,190	2,530	1,695	1,580	2,268	3,750	4,139	1,791
Other hardwoods	35,651	5,167	5,521	5,180	4,759	3,970	3,527	3,153	1,672	1,215	869	618	--
Total	706,724	61,637	72,524	83,652	73,444	72,958	66,417	56,269	45,645	35,559	74,794	44,768	19,057
All species	711,315	63,076	73,739	84,129	74,283	73,282	66,513	56,334	45,781	35,559	74,794	44,768	19,057

Table 53.--Net volume of sawtimber on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS											
Eastern redcedar	10,871	2,652	4,643	1,878	570	396	732	--	--	--	--
Total	10,871	2,652	4,643	1,878	570	396	732	--	--	--	--
HARDWOODS											
Bur oak	286,120	--	15,105	19,451	29,982	33,074	32,861	38,333	74,977	36,996	5,341
Select white oak	107,383	--	28,207	20,572	19,392	11,728	9,392	5,574	10,042	2,476	--
Other white oak	36,531	--	9,331	12,588	7,023	4,829	919	1,008	833	--	--
Select red oak	183,457	--	34,179	21,851	29,427	28,500	25,576	9,396	24,613	8,358	1,557
Other red oak	118,665	--	14,479	14,714	12,599	14,698	15,601	15,454	22,966	7,613	541
Select hickory	43,047	--	11,086	12,107	7,457	8,251	2,565	512	1,069	--	--
Other hickory	24,649	--	7,608	6,463	1,797	6,131	1,750	900	--	--	--
Pecan	28,043	--	7,187	4,722	4,398	2,471	1,885	3,412	1,565	2,403	--
Hard maple	6,280	--	2,572	1,442	399	196	479	510	--	682	--
Soft maple	87,834	--	5,149	13,036	11,635	11,876	10,378	8,203	16,775	6,305	4,477
Ash	185,760	--	29,445	36,821	29,065	30,050	17,417	11,779	29,130	2,053	--
Cottonwood	610,060	--	47,920	64,973	58,306	51,036	56,304	30,916	130,159	106,157	64,289
Basswood	25,763	--	5,949	5,938	4,077	3,481	1,822	3,087	1,110	--	299
Elm	69,531	--	10,734	14,458	8,287	6,784	5,892	6,816	11,866	4,188	506
Black walnut	169,979	--	51,197	45,359	32,738	20,232	7,497	8,302	3,188	1,466	--
Willow	47,901	--	8,763	10,110	8,234	8,262	5,535	2,651	3,706	--	640
Boxelder	22,839	--	8,390	5,347	3,667	2,896	1,257	1,065	217	--	--
Hackberry	299,581	--	60,494	52,628	54,700	40,550	29,835	22,716	27,210	11,448	--
Sycamore	105,631	--	5,564	6,357	15,469	8,786	8,967	12,463	20,119	19,769	8,137
Other hardwoods	96,304	--	22,973	19,744	16,999	15,093	8,712	5,916	4,213	2,654	--
Total	2,555,358	--	386,332	388,681	355,651	308,924	244,644	189,013	383,758	212,568	85,787
All species	2,566,229	2,652	390,975	390,559	356,221	309,320	245,376	189,013	383,758	212,568	85,787

[1/] International 1/4-inch rule.

Table 54.--Net volume of growing stock on commercial forest land by species group and forest type, Kansas, 1981

(In thousand cubic feet)

Species	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS											
Eastern redcedar	4,591	2,592	617	--	292	98	--	--	215	625	152
Total	4,591	2,592	617	--	292	98	--	--	215	625	152
HARDWOODS											
Bur oak	60,920	171	29,078	381	3,613	4,874	--	--	22,347	393	63
Select white oak	34,121	791	29,061	65	708	1,745	--	--	1,366	385	--
Other white oak	19,854	157	6,135	13,166	331	--	--	--	--	65	--
Select red oak	45,828	80	36,845	979	815	2,291	--	--	3,435	1,383	--
Other red oak	27,445	--	22,561	1,684	365	1,233	34	--	1,084	431	53
Select hickory	17,388	94	13,249	302	212	1,609	--	--	1,305	617	--
Other hickory	11,693	--	6,029	165	584	1,140	--	--	3,640	135	--
Pecan	8,986	--	7,408	--	123	1,053	--	--	235	167	--
Hard maple	3,120	--	1,403	--	--	1,117	--	--	212	388	--
Soft maple	21,011	--	330	--	--	15,591	67	--	4,845	178	--
Ash	61,700	--	6,647	--	618	39,901	1,493	206	10,998	1,633	204
Cottonwood	134,292	--	1,556	--	640	34,107	90,065	383	5,166	1,675	700
Basswood	6,031	--	2,883	--	1,442	485	126	--	468	627	--
Elm	30,599	130	5,119	--	1,274	11,901	654	--	7,901	3,235	385
Black walnut	57,868	580	11,689	206	6,286	5,315	408	--	30,528	2,747	109
Willow	11,629	--	306	--	53	9,065	913	567	465	141	119
Boxelder	10,376	--	210	--	200	7,007	360	--	2,477	69	53
Hackberry	86,674	59	6,085	68	4,728	13,207	346	--	60,377	1,423	381
Sycamore	21,538	--	2,751	--	279	7,551	242	--	9,915	723	77
Other hardwoods	35,651	91	3,729	125	1,578	13,339	457	--	11,763	4,078	491
Total	706,724	2,153	193,074	17,141	23,849	172,531	95,165	1,156	178,527	20,493	2,635
All species	711,315	4,745	193,691	17,141	24,141	172,629	95,165	1,156	178,742	21,118	2,787

Table 55.--Net volume of sawtimber on commercial forest land by species group and forest type, Kansas, 1981

(In thousand board feet)[1/]

Species	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS											
Eastern redcedar	10,871	7,523	1,649	--	--	--	--	--	360	958	381
Total	10,871	7,523	1,649	--	--	--	--	--	360	958	381
HARDWOODS											
Bur oak	286,120	571	126,292	--	14,353	25,761	--	--	117,449	1,694	--
Select white oak	107,383	3,423	86,530	339	1,721	6,867	--	--	7,072	1,431	--
Other white oak	36,531	301	11,969	22,290	1,599	--	--	--	--	372	--
Select red oak	183,457	--	149,217	2,739	3,093	11,105	--	--	13,024	4,279	--
Other red oak	118,665	--	103,150	2,589	1,578	4,332	--	--	5,085	1,593	338
Select hickory	43,047	--	29,052	1,427	1,004	7,077	--	--	3,105	1,382	--
Other hickory	24,649	--	12,535	--	--	3,760	--	--	8,025	329	--
Pecan	28,043	--	22,543	--	--	4,105	--	--	760	635	--
Hard maple	6,280	--	3,110	--	--	2,182	--	--	--	988	--
Soft maple	87,834	--	2,030	--	--	65,063	335	--	20,119	287	--
Ash	185,760	--	16,443	--	1,473	118,802	2,463	369	43,785	1,623	802
Cottonwood	610,060	--	6,366	--	3,395	164,607	399,810	1,812	25,580	5,816	2,674
Basswood	25,763	--	11,756	--	6,659	2,638	--	--	1,579	3,131	--
Elm	69,531	342	10,158	--	2,544	27,533	1,447	--	21,838	4,879	790
Black walnut	169,979	1,061	32,578	--	14,329	14,742	523	--	99,584	7,162	--
Willow	47,901	--	698	--	--	40,355	2,415	1,941	1,363	466	663
Boxelder	22,839	--	589	--	886	12,052	806	--	8,506	--	--
Hackberry	299,581	--	18,596	346	13,711	39,479	1,304	--	222,890	2,627	628
Sycamore	105,631	--	12,700	--	1,232	38,961	904	--	48,446	3,043	345
Other hardwoods	96,304	--	11,222	302	3,165	36,662	205	--	33,076	11,299	373
Total	2,555,358	5,698	667,534	30,032	70,742	626,083	410,212	4,122	681,286	53,036	6,613
All species	2,566,229	13,221	669,183	30,032	70,742	626,083	410,212	4,122	681,646	53,994	6,994

[1/] International 1/4-inch rule.

Table 56.--Net volume of growing stock on commercial forest land by species group and ownership class, Kansas, 1981

(In thousand cubic feet)

Species group	All classes	Ownership class						
		National forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
SOFTWOODS								
Eastern redcedar	4,591	--	52	--	--	--	3,289	1,250
Total	4,591	--	52	--	--	--	3,289	1,250
HARDWOODS								
Bur oak	60,920	--	1,237	--	282	--	38,563	20,838
Select white oak	34,121	--	978	--	--	200	18,816	14,127
Other white oak	19,854	--	731	--	--	--	14,227	4,896
Select red oak	45,828	--	1,049	--	--	--	27,348	17,431
Other red oak	27,445	--	123	--	3,041	--	15,875	8,406
Select hickory	17,388	--	616	--	114	--	8,230	8,428
Other hickory	11,693	--	450	--	--	--	6,696	4,547
Pecan	8,986	--	--	--	91	--	3,444	5,451
Hard maple	3,120	--	--	--	--	--	737	2,383
Soft maple	21,011	--	749	--	1,566	659	11,177	6,860
Ash	61,700	--	1,523	--	941	--	40,475	18,761
Cottonwood	134,292	--	9,794	398	2,130	--	73,053	48,917
Basswood	6,031	--	98	--	--	--	3,943	1,990
Elm	30,599	--	1,192	58	139	130	17,944	11,136
Black walnut	57,868	--	2,229	--	66	223	36,723	18,627
Willow	11,629	--	232	--	32	443	7,763	3,159
Boxelder	10,376	--	95	--	--	200	7,379	2,702
Hackberry	86,674	--	3,628	180	92	990	55,798	25,986
Sycamore	21,538	--	1,608	--	--	--	15,703	4,227
Other hardwoods	35,651	--	1,520	398	246	432	19,981	13,074
Total	706,724	--	27,852	1,034	8,740	3,277	423,875	241,946
All species	711,315	--	27,904	1,034	8,740	3,277	427,164	243,196

Table 57.--Net volume of sawtimber on commercial forest land by species group and ownership class, Kansas, 1981

(In thousand board feet)[1/]

Species group	All classes	Ownership class						
		National forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
SOFTWOODS								
Eastern redcedar	10,871	--	--	--	--	--	9,115	1,756
Total	10,871	--	--	--	--	--	9,115	1,756
HARDWOODS								
Bur oak	286,120	--	5,909	--	1,271	--	180,540	98,400
Select white oak	107,383	--	3,014	--	--	--	65,965	38,404
Other white oak	36,531	--	1,902	--	--	--	25,810	8,819
Select red oak	183,457	--	4,751	--	--	--	105,393	73,313
Other red oak	118,665	--	--	--	18,519	--	69,966	30,180
Select hickory	43,047	--	425	--	286	--	21,144	21,192
Other hickory	24,649	--	--	--	--	--	14,218	10,431
Pecan	28,043	--	--	--	541	--	12,991	14,511
Hard maple	6,280	--	--	--	--	--	1,617	4,663
Soft maple	87,834	--	2,936	--	8,597	2,004	44,993	29,304
Ash	185,760	--	4,073	--	4,798	--	118,314	58,575
Cottonwood	610,060	--	55,081	862	--	--	336,232	217,885
Basswood	25,763	--	487	--	--	--	17,069	8,207
Elm	69,531	--	2,022	--	--	628	43,595	23,286
Black walnut	169,979	--	9,998	--	342	628	107,965	51,046
Willow	47,901	--	831	--	--	2,064	31,674	13,332
Boxelder	22,839	--	--	--	--	886	16,780	5,173
Hackberry	299,581	--	9,875	315	471	2,492	192,875	93,553
Sycamore	105,631	--	9,068	--	--	--	77,423	19,140
Other hardwoods	96,304	--	5,351	1,513	1,591	1,970	49,455	36,424
Total	2,555,358	--	115,723	2,690	36,416	10,672	1,534,019	855,838
All species	2,566,229	--	115,723	2,690	36,416	10,672	1,543,134	857,594

[1/] International 1/4-inch rule.

Table 58.--Net volume of growing stock on commercial forest land by forest type and stand-age class, Kansas, 1981

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Eastern redcedar-hardwood	4,745	1,271	466	--	589	--	1,249	--	--	--	--	--	1,170	--
Oak-hickory	193,691	8,406	8,315	8,768	13,044	18,005	20,214	24,112	25,032	13,084	23,229	19,842	9,680	1,960
Post-blackjack oak	17,141	190	85	338	2,483	7,975	711	348	2,130	2,125	--	756	--	--
Upland plains hardwoods	24,141	948	2,763	2,129	2,378	2,581	3,690	5,711	940	877	--	444	1,680	--
Elm-ash-cottonwood	172,629	6,963	11,248	5,593	11,614	9,464	36,007	28,026	27,281	19,496	8,459	8,478	--	--
Cottonwood	95,165	135	71	1,693	3,632	13,005	10,609	25,472	11,615	5,226	14,536	9,171	--	--
Willow	1,156	--	761	270	--	--	125	--	--	--	--	--	--	--
Lowland plains hardwoods	178,742	4,557	5,943	4,743	14,929	6,007	28,804	36,095	36,442	14,175	15,397	9,505	675	1,470
Upland elm-ash-locust	21,118	3,006	4,162	1,578	2,854	579	1,165	1,970	1,677	1,504	1,142	447	1,034	--
Nonstocked	2,787	415	322	471	295	--	842	119	280	43	--	--	--	--
All types	711,315	25,891	34,136	25,583	51,818	57,616	103,416	121,853	105,397	56,530	62,763	48,643	14,239	3,430

Table 59.--Net volume of sawtimber on commercial forest land by forest type and stand-age class, Kansas, 1981

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Eastern redcedar-hardwood	13,221	2,209	876	--	1,018	--	4,308	--	--	--	--	--	4,810	--
Oak-hickory	669,183	29,466	25,406	17,915	23,341	37,797	44,030	87,036	99,907	57,366	104,212	90,533	42,054	10,120
Post-blackjack oak	30,032	517	--	--	1,222	6,406	1,653	1,071	8,419	7,290	--	3,454	--	--
Upland plains hardwoods	70,742	767	4,978	3,868	4,176	4,392	14,329	23,320	4,463	3,394	--	1,335	5,720	--
Elm-ash-cottonwood	626,083	23,616	21,854	11,796	19,671	29,745	135,753	112,108	110,092	77,025	44,050	40,373	--	--
Cottonwood	410,212	--	347	858	3,501	49,285	41,419	111,005	56,173	18,276	79,571	49,777	--	--
Willow	4,122	--	3,144	328	--	--	650	--	--	--	--	--	--	--
Lowland plains hardwoods	681,646	23,175	16,300	10,063	31,936	19,683	100,032	146,369	156,923	59,789	65,684	40,680	3,271	7,741
Upland elm-ash-locust	53,994	6,924	7,884	2,881	6,281	1,389	4,106	7,442	4,829	4,215	3,476	1,877	2,690	--
Nonstocked	6,994	1,410	514	337	373	--	2,513	663	968	216	--	--	--	--
All types	2,566,229	88,084	81,303	48,046	91,519	148,697	348,793	489,014	441,774	227,571	296,993	228,029	58,545	17,861

[1/] International 1/4-inch rule.

Table 60.--Net volume of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Kansas, 1981

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Eastern redcedar-hardwood															
Sawtimber	1,870	--	--	--	--	--	--	--	--	--	--	1,870	--	--	--
Poletimber	1,138	--	--	--	--	--	--	589	549	--	--	--	--	--	--
Sapling & seedling	1,737	32	133	--	532	747	293	--	--	--	--	--	--	--	--
All stands	4,745	32	133	--	532	747	293	589	549	--	--	1,870	--	--	--
Oak-hickory															
Sawtimber	116,700	--	--	277	1,220	8,219	7,987	19,731	13,943	15,803	21,678	19,380	8,462	--	--
Poletimber	57,675	--	--	--	315	1,494	4,337	9,117	12,038	5,511	5,420	15,255	4,188	--	--
Sapling & seedling	19,316	50	1,059	702	6,135	4,367	1,919	1,780	1,698	992	614	--	--	--	--
All stands	193,691	50	1,059	979	7,670	14,080	14,243	30,628	27,679	22,306	27,712	34,635	12,650	--	--
Post-blackjack oak															
Sawtimber	4,329	--	--	442	--	--	348	1,156	1,438	945	--	--	--	--	--
Poletimber	11,805	--	--	--	--	--	--	--	2,492	953	4,040	2,661	1,659	--	--
Sapling & seedling	1,007	--	--	85	--	--	137	190	--	--	595	--	--	--	--
All stands	17,141	--	--	527	--	--	485	1,346	3,930	1,898	4,635	2,661	1,659	--	--
Upland plains hardwoods															
Sawtimber	12,942	--	--	--	425	1,437	649	1,821	2,075	3,021	1,562	--	1,952	--	--
Poletimber	8,384	--	--	148	--	563	1,677	1,178	379	896	2,220	1,323	--	--	--
Sapling & seedling	2,815	--	--	401	420	708	--	565	293	428	--	--	--	--	--
All stands	24,141	--	--	549	845	2,708	2,326	3,564	2,747	4,345	3,782	1,323	1,952	--	--
Elm-ash-cottonwood															
Sawtimber	128,904	--	260	1,342	2,960	7,752	6,741	12,361	14,166	4,976	11,827	29,083	23,239	14,197	--
Poletimber	25,595	--	--	567	--	965	3,058	3,908	2,611	5,801	2,089	5,894	702	--	--
Sapling & seedling	18,130	79	518	1,182	4,405	6,210	2,494	1,138	853	108	1,143	--	--	--	--
All stands	172,629	79	778	3,091	7,365	14,927	12,293	17,407	17,630	10,885	15,059	34,977	23,941	14,197	--
Cottonwood															
Sawtimber	89,787	--	153	661	478	3,153	5,217	1,106	10,047	1,779	6,722	12,604	26,647	9,885	11,335
Poletimber	4,175	--	--	--	--	--	697	--	1,317	--	2,161	--	--	--	--
Sapling & seedling	1,203	--	71	--	135	--	--	--	--	--	997	--	--	--	--
All stands	95,165	--	224	661	613	3,153	5,914	1,106	11,364	1,779	9,880	12,604	26,647	9,885	11,335

(Table 60 continued on next page)

(Table 60 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Willow															
Sawtimber	125	--	--	--	--	--	--	--	--	--	--	125	--	--	--
Poletimber	270	--	--	--	270	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	761	--	--	--	--	--	761	--	--	--	--	--	--	--	--
All stands	1,156	--	--	--	270	--	761	--	--	--	--	125	--	--	--
Lowland plains hardwoods															
Sawtimber	142,626	--	--	--	4,919	6,790	7,161	17,118	19,043	17,642	22,897	32,283	14,773	--	--
Poletimber	25,156	--	342	401	530	--	2,794	3,723	6,051	760	4,880	5,675	--	--	--
Sapling & seedling	10,960	--	417	1,012	2,241	1,889	784	2,880	1,737	--	--	--	--	--	--
All stands	178,742	--	759	1,413	7,690	8,679	10,739	23,721	26,831	18,402	27,777	37,958	14,773	--	--
Upland elm-ash-locust															
Sawtimber	8,765	--	--	114	879	363	--	2,441	1,757	2,450	761	--	--	--	--
Poletimber	4,371	--	--	--	265	--	260	1,862	469	--	809	706	--	--	--
Sapling & seedling	7,982	50	1,332	589	1,278	1,555	925	855	867	--	531	--	--	--	--
All stands	21,118	50	1,332	703	2,422	1,918	1,185	5,158	3,093	2,450	2,101	706	--	--	--
Nonstocked	2,787	50	853	167	494	845	316	62	--	--	--	--	--	--	--
All types															
Sawtimber	506,048	--	413	2,836	10,881	27,714	28,103	55,734	62,469	46,616	65,447	95,345	75,073	24,082	11,335
Poletimber	138,569	--	342	1,116	1,380	3,022	12,823	20,377	25,906	13,921	21,619	31,514	6,549	--	--
Sapling & seedling	63,911	211	3,530	3,971	15,146	15,476	7,313	7,408	5,448	1,528	3,880	--	--	--	--
Nonstocked	2,787	50	853	167	494	845	316	62	--	--	--	--	--	--	--
All stands	711,315	261	5,138	8,090	27,901	47,057	48,555	83,581	93,823	62,065	90,946	126,859	81,622	24,082	11,335

Table 61.--Net volume of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Kansas, 1981

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Eastern redcedar-hardwood															
Sawtimber	7,551	--	--	--	--	--	--	--	--	--	--	7,551	--	--	--
Poletimber	2,585	--	--	--	--	--	--	1,018	1,567	--	--	--	--	--	--
Sapling & seedling	3,085	--	--	--	1,298	1,471	316	--	--	--	--	--	--	--	--
All stands	13,221	--	--	--	1,298	1,471	316	1,018	1,567	--	--	7,551	--	--	--
Oak-hickory															
Sawtimber	502,737	--	--	1,050	5,534	39,096	32,298	90,535	48,094	69,043	93,971	85,432	37,684	--	--
Poletimber	105,294	--	--	--	--	2,714	5,899	14,888	25,228	8,762	11,698	31,041	5,064	--	--
Sapling & seedling	61,152	--	3,847	2,102	18,542	16,111	4,677	5,796	6,497	1,489	2,091	--	--	--	--
All stands	669,183	--	3,847	3,152	24,076	57,921	42,874	111,219	79,819	79,294	107,760	116,473	42,748	--	--
Post-blackjack oak															
Sawtimber	16,894	--	--	2,867	--	--	1,071	3,522	5,805	3,629	--	--	--	--	--
Poletimber	12,466	--	--	--	--	--	--	--	3,301	1,598	6,275	1,292	--	--	--
Sapling & seedling	672	--	--	--	--	--	155	517	--	--	--	--	--	--	--
All stands	30,032	--	--	2,867	--	--	1,226	4,039	9,106	5,227	6,275	1,292	--	--	--
Upland plains hardwoods															
Sawtimber	51,615	--	--	--	2,251	6,023	1,966	7,783	7,644	11,715	8,257	--	5,976	--	--
Poletimber	15,166	--	--	--	--	1,407	3,181	1,868	--	1,784	4,513	2,413	--	--	--
Sapling & seedling	3,961	--	--	--	2,024	473	--	--	294	1,170	--	--	--	--	--
All stands	70,742	--	--	--	4,275	7,903	5,147	9,651	7,938	14,669	12,770	2,413	5,976	--	--
Elm-ash-cottonwood															
Sawtimber	529,475	--	1,009	6,911	12,522	29,764	32,633	48,100	59,250	18,447	42,297	129,997	90,325	58,220	--
Poletimber	48,220	--	--	1,235	--	1,319	5,837	9,993	6,343	6,738	4,619	10,602	1,534	--	--
Sapling & seedling	48,388	522	1,258	3,608	10,344	14,628	9,053	2,458	735	225	5,557	--	--	--	--
All stands	626,083	522	2,267	11,754	22,866	45,711	47,523	60,551	66,328	25,410	52,473	140,599	91,859	58,220	--
Cottonwood															
Sawtimber	406,054	--	548	2,152	1,624	11,869	26,627	4,744	37,663	8,722	39,360	49,792	123,350	49,003	50,600
Poletimber	3,507	--	--	--	--	--	554	--	2,953	--	--	--	--	--	--
Sapling & seedling	651	--	347	--	--	--	--	--	--	--	304	--	--	--	--
All stands	410,212	--	895	2,152	1,624	11,869	27,181	4,744	40,616	8,722	39,664	49,792	123,350	49,003	50,600

(Table 61 continued on next page)

[1/] International 1/4-inch rule.

(Table 61 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre) 0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Willow															
Sawtimber	650	--	--	--	--	--	--	--	--	--	--	650	--	--	--
Poletimber	328	--	--	--	328	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	3,144	--	--	--	--	--	3,144	--	--	--	--	--	--	--	--
All stands	4,122	--	--	--	328	--	3,144	--	--	--	--	650	--	--	--
Lowland plains hardwood															
Sawtimber	593,421	--	--	--	20,821	28,066	32,332	68,809	82,310	68,893	96,574	133,375	62,241	--	--
Poletimber	46,369	--	--	337	504	--	2,809	8,551	10,447	1,701	10,832	11,188	--	--	--
Sapling & seedling	41,856	--	1,358	1,521	8,699	5,456	3,192	9,105	12,525	--	--	--	--	--	--
All stands	681,646	--	1,358	1,858	30,024	33,522	38,333	86,465	105,282	70,594	107,406	144,563	62,241	--	--
Upland elm-ash-locust															
Sawtimber	28,725	--	--	262	3,638	1,120	--	7,597	5,215	8,788	2,105	--	--	--	--
Poletimber	7,870	--	--	--	195	--	620	4,103	314	--	1,243	1,395	--	--	--
Sapling & seedling	17,399	--	2,593	1,760	3,124	5,106	2,373	750	935	--	758	--	--	--	--
All stands	53,994	--	2,593	2,022	6,957	6,226	2,993	12,450	6,464	8,788	4,106	1,395	--	--	--
Nonstocked	6,994	--	3,140	586	1,316	1,783	169	--	--	--	--	--	--	--	--
All types															
Sawtimber	2,137,122	--	1,557	13,242	46,390	115,938	126,927	231,090	245,981	189,237	282,564	406,797	319,576	107,223	50,600
Poletimber	241,805	--	--	1,572	1,027	5,440	18,900	40,421	50,153	20,583	39,180	57,931	6,598	--	--
Sapling & seedling	180,308	522	9,403	8,991	44,031	43,245	22,910	18,626	20,986	2,884	8,710	--	--	--	--
Nonstocked	6,994	--	3,140	586	1,316	1,783	169	--	--	--	--	--	--	--	--
All stands	2,566,229	522	14,100	24,391	92,764	166,406	168,906	290,137	317,120	212,704	330,454	464,728	326,174	107,223	50,600

Table 62.--Net volume of sawtimber on commercial forest land by species group and butt log-grade, Kansas, 1981

(In thousand board feet)[1/]

Species group	All grades	Log grade			
		1	2	3	Tie and timber
SOFTWOODS					
Eastern redcedar	10,871	--	--	9,288	1,583
Total	10,871	--	--	9,288	1,583
HARDWOODS					
Bur oak	286,120	62,314	83,866	125,690	14,250
Select white oak	107,383	15,773	31,101	57,630	2,879
Other white oak	36,531	1,511	11,996	22,451	573
Select red oak	183,457	42,611	58,851	77,067	4,928
Other red oak	118,665	16,741	40,147	52,680	9,097
Select hickory	43,047	7,461	16,724	17,213	1,649
Other hickory	24,649	3,698	11,719	8,127	1,105
Pecan	28,043	11,015	6,254	10,774	--
Hard maple	6,280	1,141	1,889	2,698	552
Soft maple	87,834	19,380	28,931	35,865	3,658
Ash	185,760	68,512	61,858	53,810	1,580
Cottonwood	610,060	326,242	136,913	136,314	10,591
Basswood	25,763	8,822	3,602	12,284	1,055
Elm	69,531	8,683	10,404	46,889	3,555
Black walnut	169,979	40,924	66,343	61,521	1,191
Willow	47,901	17,421	13,992	14,031	2,457
Boxelder	22,839	--	5,456	15,893	1,490
Hackberry	299,581	89,384	96,672	103,430	10,095
Sycamore	105,631	60,261	30,246	14,175	949
Other hardwoods	96,304	7,671	30,719	53,286	4,628
Total	2,555,358	809,565	747,683	921,828	76,282
All species	2,566,229	809,565	747,683	931,116	77,865

[1/] International 1/4-inch rule.

Table 63.--Net volume of growing-stock trees by forest type and ground land use, Kansas, 1981

(In thousand cubic feet)

Forest type	Ground land use				
	Pastured commercial forest	Unpastured commercial forest	Wooded strips	Windbreaks	Wooded pasture
Eastern redcedar-hardwood	1,262	3,483	16,881	--	1,449
Oak-hickory	48,040	145,651	2,309	--	3,939
Post-blackjack oak	6,669	10,472	--	--	--
Upland plains hardwoods	9,108	15,033	1,828	475	1,438
Elm-ash-cottonwood	27,954	144,675	36,157	--	6,318
Cottonwood	25,286	69,879	3,676	--	1,313
Willow	--	1,156	1,336	--	--
Lowland plains hardwoods	33,580	145,162	12,652	--	2,801
Upland elm-ash-locust	8,071	13,047	13,706	--	2,924
Nonstocked	1,421	1,366	2,998	--	3,247
All types	161,391	549,924	91,543	475	23,429

Table 64.--Net volume of black walnut, by land class and tree class, Kansas, 1981

Tree class	Commercial forest		Nonforest with trees			
			Wooded strips		Other nonforest with trees	
	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Thousand board feet[1/]
Growing stock	57,868	--	3,368	--	2,133	--
Sawtimber	--	169,979	--	8,669	--	6,486
Short-log cull	5,495	13,121	685	991	573	909
Rough and rotten cull	5,384	--	487	--	755	--
All classes	68,747	183,100	4,540	9,660	3,461	7,395

[1/] International 1/4-inch rule.

Table 65.--Net volume of growing-stock and short-log trees on commercial forest land and wooded strips, by species group and Forest Survey Unit, Kansas, 1981

(In thousand cubic feet)

Species group	Total	Commercial forest land		Wooded strips	
		Growing-stock trees	Short-log trees	Growing-stock trees	Short-log trees
ALL UNITS					
SOFTWOODS					
Eastern redcedar	6,077	4,591	410	1,076	--
Total	6,077	4,591	410	1,076	--
HARDWOODS					
Bur oak	78,929	60,920	6,634	11,301	74
Select white oak	39,284	34,121	4,875	258	30
Other white oak	21,641	19,854	1,787	--	--
Select red oak	49,432	45,828	1,755	1,658	191
Other red oak	30,416	27,445	2,097	874	--
Select hickory	18,493	17,388	928	177	--
Other hickory	13,399	11,693	934	733	39
Pecan	10,665	8,986	757	798	124
Hard maple	3,245	3,120	125	--	--
Soft maple	25,042	21,011	1,078	2,953	--
Ash	80,493	61,700	5,446	11,082	2,265
Cottonwood	162,335	134,292	4,011	24,032	--
Basswood	7,109	6,031	734	344	--
Elm	44,980	30,599	8,010	5,154	1,217
Black walnut	67,416	57,868	5,495	3,368	685
Willow	14,014	11,629	821	1,475	89
Boxelder	17,609	10,376	3,487	2,174	1,572
Hackberry	109,599	86,674	9,118	12,710	1,097
Sycamore	26,445	21,538	250	4,657	--
Other hardwoods	52,671	35,651	8,677	6,719	1,624
Total	873,217	706,724	67,019	90,467	9,007
All species	879,294	711,315	67,429	91,543	9,007
NORTHEASTERN UNIT					
SOFTWOODS					
Eastern redcedar	2,851	2,446	225	180	--
Total	2,851	2,446	225	180	--
HARDWOODS					
Bur oak	34,479	29,902	3,708	869	--
Select white oak	25,682	22,050	3,602	--	30
Other white oak	2,315	2,107	208	--	--
Select red oak	26,738	25,577	911	250	--
Other red oak	16,583	15,385	788	410	--
Select hickory	12,395	11,801	430	164	--
Other hickory	7,690	6,665	719	267	39
Pecan	265	265	--	--	--
Hard maple	1,938	1,938	--	--	--
Soft maple	13,003	10,459	633	1,911	--
Ash	18,511	13,845	1,283	3,159	224
Cottonwood	48,389	43,561	1,017	3,811	--
Basswood	6,696	5,618	734	344	--
Elm	19,950	13,932	3,066	2,571	381
Black walnut	37,917	32,366	2,945	1,959	647
Willow	6,204	5,021	235	948	--
Boxelder	6,169	3,563	865	1,191	550
Hackberry	45,013	37,640	2,871	3,883	619
Sycamore	14,808	11,447	26	3,335	--
Other hardwoods	30,233	19,505	4,520	5,347	861
Total	374,978	312,647	28,561	30,419	3,351
All species	377,829	315,093	28,786	30,599	3,351

(Table 65 continued on next page)

(Table 65 continued)

Species group	Total	Commercial forest land		Wooded strips	
		Growing-stock trees	Short-log trees	Growing-stock trees	Short-log trees
SOUTHEASTERN UNIT					
SOFTWOODS					
Eastern redcedar	2,297	2,112	185	--	--
Total	2,297	2,112	185	--	--
HARDWOODS					
Bur oak	19,183	15,644	1,613	1,852	74
Select white oak	13,602	12,071	1,273	258	--
Other white oak	19,326	17,747	1,579	--	--
Select red oak	22,694	20,251	844	1,408	191
Other red oak	13,833	12,060	1,309	464	--
Select hickory	6,098	5,587	498	13	--
Other hickory	5,709	5,028	215	466	--
Pecan	10,257	8,578	757	798	124
Hard maple	1,307	1,182	125	--	--
Soft maple	11,912	10,552	318	1,042	--
Ash	30,634	26,734	1,759	1,232	909
Cottonwood	11,272	9,786	438	1,048	--
Basswood	413	413	--	--	--
Elm	19,065	12,589	3,150	2,490	836
Black walnut	26,920	23,004	2,469	1,409	38
Willow	4,860	4,204	284	283	89
Boxelder	4,114	1,831	708	983	592
Hackberry	45,226	38,441	2,275	4,328	182
Sycamore	11,333	9,787	224	1,322	--
Other hardwoods	15,694	11,527	2,032	1,372	763
Total	293,452	247,016	21,870	20,768	3,798
All species	295,749	249,128	22,055	20,768	3,798
WESTERN UNIT					
SOFTWOODS					
Eastern redcedar	929	33	--	896	--
Total	929	33	--	896	--
HARDWOODS					
Bur oak	25,267	15,374	1,313	8,580	--
Select white oak	--	--	--	--	--
Other white oak	--	--	--	--	--
Select red oak	--	--	--	--	--
Other red oak	--	--	--	--	--
Select hickory	--	--	--	--	--
Other hickory	--	--	--	--	--
Pecan	143	143	--	--	--
Hard maple	--	--	--	--	--
Soft maple	127	--	127	--	--
Ash	31,348	21,121	2,404	6,691	1,132
Cottonwood	102,674	80,945	2,556	19,173	--
Basswood	--	--	--	--	--
Elm	5,965	4,078	1,794	93	--
Black walnut	2,579	2,498	81	--	--
Willow	2,950	2,404	302	244	--
Boxelder	7,326	4,982	1,914	--	430
Hackberry	19,360	10,593	3,972	4,499	296
Sycamore	304	304	--	--	--
Other hardwoods	6,744	4,619	2,125	--	--
Total	204,787	147,061	16,588	39,280	1,858
All species	205,716	147,094	16,588	40,176	1,858

Table 66.--Net volume of sawtimber and short-log trees on commercial forest land and wooded strips, by species group and Forest Survey Unit, Kansas, 1981

(In thousand board feet)[1/]

Species group	Total	Commercial forest land		Wooded strips	
		Sawtimber trees	Short-log trees	Sawtimber trees	Short-log trees
ALL UNITS					
SOFTWOODS					
Eastern redcedar	12,870	10,871	779	1,220	--
Total	12,870	10,871	779	1,220	--
HARDWOODS					
Bur oak	350,299	286,120	16,080	48,099	--
Select white oak	119,652	107,383	12,269	--	--
Other white oak	38,525	36,531	1,994	--	--
Select red oak	192,823	183,457	4,733	4,633	--
Other red oak	128,529	118,665	6,328	3,536	--
Select hickory	44,878	43,047	1,831	--	--
Other hickory	27,293	24,649	1,685	959	--
Pecan	33,204	28,043	1,903	2,860	398
Hard maple	6,613	6,280	333	--	--
Soft maple	101,089	87,834	2,571	10,684	--
Ash	236,913	185,760	11,798	34,894	4,461
Cottonwood	707,410	610,060	13,704	83,646	--
Basswood	28,141	25,763	1,571	807	--
Elm	92,790	69,531	12,387	9,199	1,673
Black walnut	192,760	169,979	13,121	8,669	991
Willow	57,075	47,901	2,355	6,433	386
Boxelder	39,152	22,839	7,992	5,125	3,196
Hackberry	363,523	299,581	21,596	41,472	874
Sycamore	120,423	105,631	370	14,422	--
Other hardwoods	135,631	96,304	12,504	23,399	3,424
Total	3,016,723	2,555,358	147,125	298,837	15,403
All species	3,029,593	2,566,229	147,904	300,057	15,403
NORTHEASTERN UNIT					
SOFTWOODS					
Eastern redcedar	5,209	5,106	103	--	--
Total	5,209	5,106	103	--	--
HARDWOODS					
Bur oak	136,514	124,290	8,605	3,619	--
Select white oak	87,258	77,476	9,782	--	--
Other white oak	6,476	6,145	331	--	--
Select red oak	106,363	104,284	2,079	--	--
Other red oak	76,262	70,133	3,922	2,207	--
Select hickory	24,651	24,060	591	--	--
Other hickory	15,851	14,453	1,398	--	--
Pecan	575	575	--	--	--
Hard maple	3,635	3,635	--	--	--
Soft maple	53,320	44,464	1,384	7,472	--
Ash	57,355	42,154	2,698	12,186	317
Cottonwood	212,554	196,103	2,572	13,879	--
Basswood	27,185	24,807	1,571	807	--
Elm	33,538	25,507	3,148	4,536	347
Black walnut	111,345	96,526	8,285	5,543	991
Willow	23,260	19,065	257	3,938	--
Boxelder	9,787	5,924	1,818	1,129	916
Hackberry	133,687	112,814	8,586	11,413	874
Sycamore	64,790	56,268	--	8,522	--
Other hardwoods	81,192	53,824	6,979	18,801	1,588
Total	1,265,598	1,102,507	64,006	94,052	5,033
All species	1,270,807	1,107,613	64,109	94,052	5,033

(Table 66 continued on next page)

[1/] International 1/4-inch rule.

(Table 66 continued)

Species group	Total	Commercial forest land		Wooded strips	
		Growing-stock trees	Short-log trees	Growing-stock trees	Short-log trees
SOUTHEASTERN UNIT					
SOFTWOODS					
Eastern redcedar	6,441	5,765	676	--	--
Total	6,441	5,765	676	--	--
HARDWOODS					
Bur oak	83,901	72,739	3,331	7,831	--
Select white oak	32,394	29,907	2,487	--	--
Other white oak	32,049	30,386	1,663	--	--
Select red oak	86,460	79,173	2,654	4,633	--
Other red oak	52,267	48,532	2,406	1,329	--
Select hickory	20,227	18,987	1,240	--	--
Other hickory	11,442	10,196	287	959	--
Pecan	31,869	26,708	1,903	2,860	398
Hard maple	2,978	2,645	333	--	--
Soft maple	47,363	43,370	781	3,212	--
Ash	96,218	87,049	3,406	3,867	1,896
Cottonwood	45,351	39,358	1,244	4,749	--
Basswood	956	956	--	--	--
Elm	40,542	29,537	5,016	4,663	1,326
Black walnut	73,954	65,992	4,836	3,126	--
Willow	18,858	16,467	637	1,368	386
Boxelder	13,231	6,077	1,488	3,996	1,670
Hackberry	158,074	137,513	5,239	15,322	--
Sycamore	53,923	47,653	370	5,900	--
Other hardwoods	38,647	29,536	2,677	4,598	1,836
Total	940,704	822,781	41,998	68,413	7,512
All species	947,145	828,546	42,674	68,413	7,512
WESTERN UNIT					
SOFTWOODS					
Eastern redcedar	1,220	--	--	1,220	--
Total	1,220	--	--	1,220	--
HARDWOODS					
Bur oak	129,884	89,091	4,144	36,649	--
Select white oak	--	--	--	--	--
Other white oak	--	--	--	--	--
Select red oak	--	--	--	--	--
Other red oak	--	--	--	--	--
Select hickory	--	--	--	--	--
Other hickory	--	--	--	--	--
Pecan	760	760	--	--	--
Hard maple	--	--	--	--	--
Soft maple	406	--	406	--	--
Ash	83,340	56,557	5,694	18,841	2,248
Cottonwood	449,505	374,599	9,888	65,018	--
Basswood	--	--	--	--	--
Elm	18,710	14,487	4,223	--	--
Black walnut	7,461	7,461	--	--	--
Willow	14,957	12,369	1,461	1,127	--
Boxelder	16,134	10,838	4,686	--	610
Hackberry	71,762	49,254	7,771	14,737	--
Sycamore	1,710	1,710	--	--	--
Other hardwoods	15,792	12,944	2,848	--	--
Total	810,421	630,070	41,121	136,372	2,858
All species	811,641	630,070	41,121	137,592	2,858

Table 67.--Net volume of short-log trees on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS													
Eastern redcedar	410	97	176	25	--	85	27	--	--	--	--	--	--
Total	410	97	176	25	--	85	27	--	--	--	--	--	--
HARDWOODS													
Bur oak	6,634	219	120	476	481	347	352	596	215	607	1,752	981	488
Select white oak	4,875	422	734	1,080	799	365	539	234	141	142	370	49	--
Other white oak	1,787	543	406	303	422	--	50	--	--	--	63	--	--
Select red oak	1,755	104	156	278	353	371	160	--	159	92	56	26	--
Other red oak	2,097	176	446	234	644	135	211	147	--	--	104	--	--
Select hickory	928	231	159	62	--	246	53	--	114	63	--	--	--
Other hickory	934	125	178	184	270	51	--	--	--	--	126	--	--
Pecan	757	94	32	--	55	99	73	195	76	133	--	--	--
Hard maple	125	36	--	--	89	--	--	--	--	--	--	--	--
Soft maple	1,078	--	--	142	208	127	124	83	83	--	216	95	--
Ash	5,446	312	812	848	584	793	855	316	370	46	510	--	--
Cottonwood	4,011	--	178	217	1,140	150	438	116	280	317	184	684	307
Basswood	734	--	--	160	192	64	112	--	82	--	61	63	--
Elm	8,010	1,641	1,788	1,097	821	631	537	318	267	119	586	205	--
Black walnut	5,495	752	603	1,060	1,048	840	497	165	277	180	73	--	--
Willow	821	80	--	167	155	149	59	111	100	--	--	--	--
Boxelder	3,487	307	525	466	256	416	665	672	180	--	--	--	--
Hackberry	9,118	862	1,390	1,029	1,718	1,533	889	499	390	292	354	162	--
Sycamore	250	--	140	--	49	--	61	--	--	--	--	--	--
Other hardwoods	8,677	1,958	2,059	1,092	841	923	525	309	225	324	319	42	60
Total	67,019	7,862	9,726	8,895	10,125	7,240	6,200	3,761	2,959	2,315	4,774	2,307	855
All species	67,429	7,959	9,902	8,920	10,125	7,325	6,227	3,761	2,959	2,315	4,774	2,307	855

Table 68.--Net volume of short-log trees on commercial forest land by species group and diameter class, Kansas, 1981

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS											
Eastern redcedar	779	103	--	173	503	--	--	--	--	--	--
Total	779	103	--	173	503	--	--	--	--	--	--
HARDWOODS											
Bur oak	16,080	--	2,480	1,379	1,419	1,830	589	1,583	4,580	1,657	563
Select white oak	12,269	--	5,010	1,447	3,329	707	396	267	920	193	--
Other white oak	1,994	--	1,715	--	159	--	--	--	120	--	--
Select red oak	4,733	--	1,505	1,462	765	--	392	315	233	61	--
Other red oak	6,328	--	4,089	550	923	556	--	--	210	--	--
Select hickory	1,831	--	--	925	177	--	434	295	--	--	--
Other hickory	1,685	--	885	287	--	--	--	--	513	--	--
Pecan	1,903	--	203	302	243	698	71	386	--	--	--
Hard maple	333	--	333	--	--	--	--	--	--	--	--
Soft maple	2,571	--	667	406	348	38	222	--	721	169	--
Ash	11,798	--	2,013	2,947	2,458	1,573	1,069	129	1,609	--	--
Cottonwood	13,704	--	4,272	600	1,380	421	1,170	1,768	666	2,210	1,217
Basswood	1,571	--	584	185	299	--	340	--	94	69	--
Elm	12,387	--	3,049	2,026	2,041	1,314	804	334	2,008	811	--
Black walnut	13,121	--	4,019	4,847	1,666	542	1,126	635	286	--	--
Willow	2,355	--	472	892	209	430	352	--	--	--	--
Boxelder	7,992	--	888	1,682	2,221	2,386	815	--	--	--	--
Hackberry	21,596	--	8,014	6,146	2,714	1,815	923	690	1,004	290	--
Sycamore	370	--	149	--	221	--	--	--	--	--	--
Other hardwoods	12,504	--	3,296	3,412	2,132	1,249	574	692	1,007	67	75
Total	147,125	--	43,643	29,495	22,704	13,559	9,277	7,094	13,971	5,527	1,855
All species	147,904	103	43,643	29,668	23,207	13,559	9,277	7,094	13,971	5,527	1,855

[1/] International 1/4-inch rule.

Table 69.--Net volume of all live trees on wooded strips by species group and diameter class, Kansas, 1981

(In thousand cubic feet)

Species group	All classes	Diameter class (inches at breast height) 5.0-6.9	7.0-8.9	9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS													
Eastern redcedar	1,186	390	574	222	--	--	--	--	--	--	--	--	--
Total	1,186	390	574	222	--	--	--	--	--	--	--	--	--
HARDWOODS													
Bur oak	11,408	61	--	136	148	141	--	--	--	638	10,284	--	--
Select white oak	382	289	--	93	--	--	--	--	--	--	--	--	--
Other white oak	--	--	--	--	--	--	--	--	--	--	--	--	--
Select red oak	1,915	157	99	567	379	157	--	--	--	--	556	--	--
Other red oak	961	68	49	104	172	481	--	--	87	--	--	--	--
Select hickory	177	177	--	--	--	--	--	--	--	--	--	--	--
Other hickory	815	51	274	268	222	--	--	--	--	--	--	--	--
Pecan	921	--	--	136	135	319	--	331	--	--	--	--	--
Hard maple	34	34	--	--	--	--	--	--	--	--	--	--	--
Soft maple	3,878	364	311	392	98	--	247	316	406	924	775	45	--
Ash	18,985	2,132	2,350	2,300	2,162	1,694	3,103	640	--	4,604	--	--	--
Cottonwood	25,747	159	424	389	905	587	1,320	1,167	1,488	3,205	2,980	13,054	69
Basswood	544	53	45	97	150	199	--	--	--	--	--	--	--
Elm	9,382	2,556	1,392	1,970	919	910	776	814	--	45	--	--	--
Black walnut	4,540	770	894	536	414	957	241	648	--	48	32	--	--
Willow	1,980	146	185	63	624	51	--	96	--	788	27	--	--
Boxelder	6,499	751	1,527	1,041	709	796	786	889	--	--	--	--	--
Hackberry	15,704	2,201	1,670	1,353	1,722	1,400	932	685	1,632	483	3,549	77	--
Sycamore	4,694	--	74	84	--	--	213	--	--	1,072	--	3,251	--
Other hardwoods	11,180	1,181	1,249	1,185	952	1,107	745	951	964	--	1,081	1,765	--
Noncommercial species	5,854	1,338	1,309	1,052	539	152	277	487	--	700	--	--	--
Total	125,600	12,488	11,852	11,766	10,250	8,951	8,640	7,024	4,577	12,507	19,284	18,192	69
All species	126,786	12,878	12,426	11,988	10,250	8,951	8,640	7,024	4,577	12,507	19,284	18,192	69

Table 70.--Net volume of sawtimber on wooded strips by species group and diameter class, Kansas, 1981

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS											
Eastern redcedar	1,220	1,220	--	--	--	--	--	--	--	--	--
Total	1,220	1,220	--	--	--	--	--	--	--	--	--
HARDWOODS											
Bur oak	48,099	--	805	741	--	--	--	2,878	43,675	--	--
Select white oak	--	--	--	--	--	--	--	--	--	--	--
Other white oak	--	--	--	--	--	--	--	--	--	--	--
Select red oak	4,633	--	1,651	826	--	--	--	--	2,156	--	--
Other red oak	3,536	--	909	2,627	--	--	--	--	--	--	--
Select hickory	--	--	--	--	--	--	--	--	--	--	--
Other hickory	959	--	959	--	--	--	--	--	--	--	--
Pecan	2,860	--	664	861	--	1,335	--	--	--	--	--
Hard maple	--	--	--	--	--	--	--	--	--	--	--
Soft maple	10,684	--	468	--	1,094	1,589	--	4,321	3,212	--	--
Ash	34,894	--	8,915	5,294	5,293	1,818	--	13,574	--	--	--
Cottonwood	83,646	--	4,365	2,965	6,724	4,939	7,033	13,539	7,665	36,416	--
Basswood	807	--	807	--	--	--	--	--	--	--	--
Elm	9,199	--	477	2,517	2,631	3,574	--	--	--	--	--
Black walnut	8,669	--	1,978	4,448	--	2,243	--	--	--	--	--
Willow	6,433	--	2,234	372	--	373	--	3,454	--	--	--
Boxelder	5,125	--	1,129	570	907	2,519	--	--	--	--	--
Hackberry	41,472	--	7,354	6,112	3,107	3,468	7,899	--	13,158	374	--
Sycamore	14,422	--	--	--	1,082	--	--	4,818	--	8,522	--
Other hardwoods	23,399	--	1,667	3,056	1,252	4,420	4,579	--	--	8,425	--
Total	298,837	--	34,382	30,389	22,090	26,278	19,511	42,584	69,866	53,737	--
All species	300,057	1,220	34,382	30,389	22,090	26,278	19,511	42,584	69,866	53,737	--

[1/] International 1/4-inch rule.

Table 71.--Net volume of short-log trees on wooded strips by species group and diameter class, Kansas, 1981

(In thousand board feet)[1/]

Species group	All classes	Diameter class (inches at breast height) 9.0-10.9	11.0-12.9	13.0-14.9	15.0-16.9	17.0-18.9	19.0-20.9	21.0-22.9	23.0-28.9	29.0-38.9	39.0+
SOFTWOODS											
Eastern redcedar	--	--	--	--	--	--	--	--	--	--	--
Total	--	--	--	--	--	--	--	--	--	--	--
HARDWOODS											
Bur oak	--	--	--	--	--	--	--	--	--	--	--
Select white oak	--	--	--	--	--	--	--	--	--	--	--
Other white oak	--	--	--	--	--	--	--	--	--	--	--
Select red oak	--	--	--	--	--	--	--	--	--	--	--
Other red oak	--	--	--	--	--	--	--	--	--	--	--
Select hickory	--	--	--	--	--	--	--	--	--	--	--
Other hickory	--	--	--	--	--	--	--	--	--	--	--
Pecan	398	--	--	398	--	--	--	--	--	--	--
Hard maple	--	--	--	--	--	--	--	--	--	--	--
Soft maple	--	--	--	--	--	--	--	--	--	--	--
Ash	4,462	--	680	--	2,248	643	--	891	--	--	--
Cottonwood	--	--	--	--	--	--	--	--	--	--	--
Basswood	--	--	--	--	--	--	--	--	--	--	--
Elm	1,673	--	343	691	639	--	--	--	--	--	--
Black walnut	991	--	--	313	678	--	--	--	--	--	--
Willow	386	--	386	--	--	--	--	--	--	--	--
Boxelder	3,196	--	1,246	280	757	913	--	--	--	--	--
Hackberry	874	--	325	--	549	--	--	--	--	--	--
Sycamore	--	--	--	--	--	--	--	--	--	--	--
Other hardwoods	3,424	--	1,271	421	759	--	--	--	973	--	--
Total	15,404	--	4,251	2,103	5,630	1,556	--	891	973	--	--
All species	15,404	--	4,251	2,103	5,630	1,556	--	891	973	--	--

[1/] International 1/4-inch rule.

Table 72.--Net volume of growing stock on wooded strips by species group and forest type, Kansas, 1981

(In thousand cubic feet)

Species	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS											
Eastern redcedar	1,077	1,058	--	--	--	--	--	--	--	--	19
Total	1,077	1,058	--	--	--	--	--	--	--	--	19
HARDWOODS											
Bur oak	11,302	--	231	--	--	10,433	--	--	--	638	--
Select white oak	258	--	258	--	--	--	--	--	--	--	--
Other white oak	--	--	--	--	--	--	--	--	--	--	--
Select red oak	1,658	--	305	--	250	887	--	--	--	--	216
Other red oak	874	--	414	--	--	460	--	--	--	--	--
Select hickory	177	--	--	--	--	13	--	--	147	17	--
Other hickory	733	--	384	--	--	285	--	--	64	--	--
Pecan	798	--	--	--	--	798	--	--	--	--	--
Hard maple	--	--	--	--	--	--	--	--	--	--	--
Soft maple	2,953	--	--	--	--	2,905	--	--	--	--	48
Ash	11,081	1,814	--	--	--	6,848	--	--	949	1,434	36
Cottonwood	24,032	14,009	--	--	--	2,279	3,676	997	--	1,583	1,488
Basswood	344	--	--	--	344	--	--	--	--	--	--
Elm	5,154	--	72	--	274	2,266	--	--	583	1,868	91
Black walnut	3,367	--	117	--	85	403	--	--	2,694	--	68
Willow	1,474	--	--	--	43	131	--	168	--	136	996
Boxelder	2,175	--	--	--	--	1,341	--	--	834	--	--
Hackberry	12,709	--	381	--	287	6,461	--	155	4,673	752	--
Sycamore	4,657	--	--	--	--	--	--	--	1,322	3,335	--
Other hardwoods	6,720	--	147	--	545	647	--	16	1,386	3,943	36
Total	90,466	15,823	2,309	--	1,828	36,157	3,676	1,336	12,652	13,706	2,979
All species	91,543	16,881	2,309	--	1,828	36,157	3,676	1,336	12,652	13,706	2,998

Table 73.--Net volume of sawtimber on wooded strips by species group and forest type, Kansas, 1981

(In thousand board feet)[1/]

Species	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS											
Eastern redcedar	1,220	1,220	--	--	--	--	--	--	--	--	--
Total	1,220	1,220	--	--	--	--	--	--	--	--	--
HARDWOODS											
Bur oak	48,099	--	741	--	--	44,480	--	--	--	2,878	--
Select white oak	--	--	--	--	--	--	--	--	--	--	--
Other white oak	--	--	--	--	--	--	--	--	--	--	--
Select red oak	4,633	--	--	--	--	3,531	--	--	--	--	1,102
Other red oak	3,536	--	1,329	--	--	2,207	--	--	--	--	--
Select hickory	--	--	--	--	--	--	--	--	--	--	--
Other hickory	959	--	--	--	--	959	--	--	--	--	--
Pecan	2,860	--	--	--	--	2,860	--	--	--	--	--
Hard maple	--	--	--	--	--	--	--	--	--	--	--
Soft maple	10,684	--	--	--	--	10,684	--	--	--	--	--
Ash	34,894	8,180	--	--	--	19,701	--	--	3,413	3,600	--
Cottonwood	83,646	41,355	--	--	--	7,182	16,629	4,187	--	7,260	7,033
Basswood	807	--	--	--	807	--	--	--	--	--	--
Elm	9,199	--	--	--	477	2,631	--	--	1,297	4,794	--
Black walnut	8,669	--	--	--	--	847	--	--	7,367	--	455
Willow	6,433	--	--	--	--	623	--	745	--	484	4,581
Boxelder	5,125	--	--	--	--	2,008	--	--	3,117	--	--
Hackberry	41,472	--	1,037	--	--	24,172	--	374	12,556	3,333	--
Sycamore	14,422	--	--	--	--	--	--	--	5,900	8,522	--
Other hardwoods	23,399	--	413	--	2,093	1,252	--	--	3,991	15,650	--
Total	298,837	49,535	3,520	--	3,377	123,137	16,629	5,306	37,641	46,521	13,171
All species	300,057	50,755	3,520	--	3,377	123,137	16,629	5,306	37,641	46,521	13,171

[1/] International 1/4-inch rule.

Table 74.--Net annual growth of growing stock on commercial forest land by softwoods and hardwoods, Kansas, 1964 and 1980

(In thousand cubic feet)

Species	1964[1/]	1980
Softwoods	--	471
Hardwoods	22,100	22,759
All species	22,100	23,230

[1/] Figures have been adjusted from those published after the 1965 survey to conform to 1980 volumes because of changes in survey definitions and procedures.

Table 75.--Net annual growth of growing stock on commercial forest land by species group and Forest Survey Unit, Kansas, 1980

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit		
		Northeastern Unit	Southeastern Unit	Western Unit
SOFTWOODS				
Eastern redcedar	471	271	197	3
Total	471	271	197	3
HARDWOODS				
Bur oak	1,251	576	433	242
Select white oak	779	485	294	--
Other white oak	594	43	551	--
Select red oak	1,467	674	793	--
Other red oak	611	282	329	--
Select hickory	467	341	126	--
Other hickory	470	341	129	--
Pecan	254	4	247	3
Hard maple	94	58	36	--
Soft maple	941	423	518	--
Ash	1,958	403	892	663
Cottonwood	2,525	1,023	179	1,323
Basswood	199	166	33	--
Elm	678	224	538	-84
Black walnut	2,167	926	1,010	231
Willow	382	138	131	113
Boxelder	762	226	68	468
Hackberry	4,454	1,755	2,184	515
Sycamore	590	268	314	8
Other hardwoods	2,116	1,032	708	376
Total	22,759	9,388	9,513	3,858
All species	23,230	9,659	9,710	3,861

Table 76.--Net annual growth of sawtimber on commercial forest land by species group and Forest Survey Unit, Kansas, 1980

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit: Northeastern Unit	Forest Survey Unit: Southeastern Unit	Forest Survey Unit: Western Unit
SOFTWOODS				
Eastern redcedar	90	95	-5	--
Total	90	95	-5	--
HARDWOODS				
Bur oak	4,255	1,738	1,408	1,109
Select white oak	2,041	1,772	269	--
Other white oak	460	102	358	--
Select red oak	7,275	3,977	3,298	--
Other red oak	1,179	902	277	--
Select hickory	953	796	157	--
Other hickory	1,060	479	581	--
Pecan	1,113	1	1,103	9
Hard maple	607	66	541	--
Soft maple	3,170	1,462	1,708	--
Ash	4,768	870	3,299	599
Cottonwood	8,773	2,432	1,003	5,338
Basswood	360	354	6	--
Elm	-2,234	-2,142	763	-855
Black walnut	5,911	2,892	2,994	25
Willow	2,742	1,860	444	438
Boxelder	1,642	728	476	438
Hackberry	13,246	5,463	6,444	1,339
Sycamore	2,403	892	1,482	29
Other hardwoods	4,223	2,782	984	457
Total	63,947	27,426	27,595	8,926
All species	64,037	27,521	27,590	8,926

[1/] International 1/4-inch rule.

Table 77.--Net annual growth of growing stock on commercial forest land by species group and ownership class, Kansas, 1980

(In thousand cubic feet)

Species group	All classes	Ownership class: National forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
SOFTWOODS								
Eastern redcedar	471	--	2	--	--	--	325	144
Total	471	--	2	--	--	--	325	144
HARDWOODS								
Bur oak	1,251	--	164	--	4	--	715	368
Select white oak	779	--	15	--	--	7	314	443
Other white oak	594	--	18	--	--	--	432	144
Select red oak	1,467	--	27	--	--	--	891	549
Other red oak	611	--	6	--	22	--	270	313
Select hickory	467	--	13	--	4	--	252	198
Other hickory	470	--	8	--	--	--	309	153
Pecan	254	--	--	--	2	--	113	139
Hard maple	94	--	--	--	--	--	29	65
Soft maple	941	--	22	--	75	42	567	235
Ash	1,958	--	40	--	25	--	1,347	546
Cottonwood	2,525	--	276	2	159	--	1,656	432
Basswood	199	--	2	--	--	--	125	72
Elm	678	--	52	3	5	2	519	97
Black walnut	2,167	--	50	--	2	--	1,162	953
Willow	382	--	2	--	4	23	248	105
Boxelder	762	--	--	--	--	10	475	277
Hackberry	4,454	--	203	7	2	54	2,828	1,360
Sycamore	590	--	42	--	--	--	447	101
Other hardwoods	2,116	--	78	13	12	14	1,336	663
Total	22,759	--	1,018	25	316	152	14,035	7,213
All species	23,230	--	1,020	25	316	152	14,360	7,357

Table 78.--Net annual growth of sawtimber on commercial forest land by species group and ownership class, Kansas, 1980

(In thousand board feet)[1/]

Species group	All classes	Ownership class						
		National forest	Misc. federal	Indian	State	County and municipal	Farmer	Misc. private
SOFTWOODS								
Eastern redcedar	90	--	--	--	--	--	70	20
Total	90	--	--	--	--	--	70	20
HARDWOODS								
Bur oak	4,255	--	104	--	11	--	2,954	1,186
Select white oak	2,041	--	30	--	--	--	1,395	616
Other white oak	460	--	39	--	--	--	355	66
Select red oak	7,275	--	627	--	--	--	2,689	3,959
Other red oak	1,179	--	--	--	116	--	158	905
Select hickory	953	--	3	--	8	--	305	637
Other hickory	1,060	--	--	--	--	--	93	967
Pecan	1,113	--	--	--	6	--	807	300
Hard maple	607	--	--	--	--	--	308	299
Soft maple	3,170	--	95	--	250	237	1,177	1,411
Ash	4,768	--	112	--	420	--	3,323	913
Cottonwood	8,773	--	843	2	--	--	6,435	1,493
Basswood	360	--	9	--	--	--	240	111
Elm	-2,234	--	-14	--	--	7	-1,392	-835
Black walnut	5,911	--	211	--	13	--	3,560	2,127
Willow	2,742	--	--	--	--	187	2,155	400
Boxelder	1,642	--	--	--	--	367	685	590
Hackberry	13,246	--	340	13	9	120	8,437	4,327
Sycamore	2,403	--	148	--	--	--	1,938	317
Other hardwoods	4,223	--	111	44	33	70	2,131	1,834
Total	63,947	--	2,658	59	866	988	37,753	21,623
All species	64,037	--	2,658	59	866	988	37,823	21,643

[1/] International 1/4-inch rule.

Table 79.--Net annual growth of growing stock on commercial forest land by species group and forest type, Kansas, 1980

(In thousand cubic feet)

Species	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS											
Eastern redcedar	471	170	22	--	23	2	--	--	102	146	6
Total	471	170	22	--	23	2	--	--	102	146	6
HARDWOODS											
Bur oak	1,251	2	430	8	163	65	--	--	574	8	1
Select white oak	779	-23	632	1	17	122	--	--	21	9	--
Other white oak	594	3	111	470	9	--	--	--	--	1	--
Select red oak	1,467	2	1,205	24	68	43	--	--	89	36	--
Other red oak	611	--	457	83	6	-24	63	--	13	13	--
Select hickory	467	2	389	-15	7	36	--	--	32	16	--
Other hickory	470	--	329	7	27	25	--	--	78	4	--
Pecan	254	--	183	--	15	42	--	--	3	11	--
Hard maple	94	--	37	--	--	31	--	--	11	15	--
Soft maple	941	--	11	--	--	754	2	--	167	7	--
Ash	1,958	--	152	--	18	1,260	105	9	268	142	4
Cottonwood	2,525	--	39	--	7	261	2,054	12	100	16	36
Basswood	199	--	55	--	55	6	4	--	65	14	--
Elm	678	2	205	--	160	467	46	--	-369	160	7
Black walnut	2,167	21	369	3	293	272	24	--	1,117	65	3
Willow	382	--	5	--	3	334	-3	24	9	5	5
Boxelder	762	--	7	--	10	594	23	--	122	4	2
Hackberry	4,454	2	312	1	355	763	13	--	2,939	46	23
Sycamore	590	--	60	-8	10	223	10	--	277	16	2
Other hardwoods	2,116	2	201	3	71	834	18	--	660	304	23
Total	22,759	13	5,189	577	1,294	6,108	2,359	45	6,176	892	106
All species	23,230	183	5,211	577	1,317	6,110	2,359	45	6,278	1,038	112

Table 80.--Net annual growth of sawtimber on commercial forest land by species group and forest type, Kansas, 1980

(In thousand board feet)[1/]

Species	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS											
Eastern redcedar	90	5	33	--	--	--	--	--	--	46	6
Total	90	5	33	--	--	--	--	--	--	46	6
HARDWOODS											
Bur oak	4,255	6	1,675	--	179	312	--	--	2,055	28	--
Select white oak	2,041	53	1,797	6	25	50	--	--	81	29	--
Other white oak	460	3	232	186	36	--	--	--	--	3	--
Select red oak	7,275	--	5,431	40	71	207	--	--	1,440	86	--
Other red oak	1,179	--	1,193	83	15	-200	--	--	46	42	--
Select hickory	953	--	412	2	23	106	--	--	392	18	--
Other hickory	1,060	--	568	--	--	40	--	--	449	3	--
Pecan	1,113	--	887	--	--	187	--	--	9	30	--
Hard maple	607	--	538	--	--	47	--	--	--	22	--
Soft maple	3,170	--	219	--	--	1,945	13	--	982	11	--
Ash	4,768	--	296	--	29	3,035	47	14	1,309	27	11
Cottonwood	8,773	--	125	--	24	456	7,600	60	350	51	107
Basswood	360	--	170	--	86	32	--	--	14	58	--
Elm	-2,234	1	-126	--	81	-419	18	--	-1,964	160	15
Black walnut	5,911	31	679	--	391	1,040	396	--	3,226	148	--
Willow	2,742	--	-1	--	--	2,493	106	80	23	13	28
Boxelder	1,642	--	9	--	367	921	38	--	307	--	--
Hackberry	13,246	--	620	6	1,336	2,295	92	--	8,774	59	64
Sycamore	2,403	--	489	--	36	558	27	--	1,219	66	8
Other hardwoods	4,223	--	421	5	107	1,660	12	--	1,087	914	17
Total	63,947	94	15,634	328	2,806	14,765	8,349	154	19,799	1,768	250
All species	64,037	99	15,667	328	2,806	14,765	8,349	154	19,799	1,814	256

[1/] International 1/4-inch rule.

Table 81.--Net annual growth of growing stock on commercial forest land by forest type and stand-age class, Kansas, 1980

(In thousand cubic feet)

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Eastern redcedar-hardwood	183	38	70	--	-25	--	64	--	--	--	--	--	36	--
Oak-hickory	5,211	54	140	406	576	621	711	815	789	300	439	236	109	15
Post-blackjack oak	577	3	2	-1	101	362	10	6	7	48	--	39	--	--
Upland plains hardwoods	1,317	33	178	266	220	144	222	164	23	26	--	7	34	--
Elm-ash-cottonwood	6,110	121	594	215	672	291	1,466	1,109	952	183	191	316	--	--
Cottonwood	2,359	6	2	119	176	191	305	714	241	129	315	161	--	--
Willow	45	2	29	10	--	--	4	--	--	--	--	--	--	--
Lowland plains hardwoods	6,278	91	384	181	555	227	1,142	1,555	1,180	469	319	119	10	46
Upland elm-ash-locust	1,038	165	193	139	215	16	42	42	123	40	38	--	25	--
Nonstocked	112	15	7	25	13	--	40	5	6	1	--	--	--	--
All types	23,230	528	1,599	1,360	2,503	1,852	4,006	4,410	3,321	1,196	1,302	878	214	61

Table 82.--Net annual growth of sawtimber on commercial forest land by forest type and stand-age class, Kansas, 1980

(In thousand board feet)[1/]

Forest type	All classes	Stand-age class (years)												
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-140	141+
Eastern redcedar-hardwood	99	48	16	--	16	--	-57	--	--	--	--	--	76	--
Oak-hickory	15,667	521	8	946	1,855	1,237	1,988	2,049	2,556	1,236	2,194	743	288	46
Post-blackjack oak	328	7	--	--	11	113	14	9	-19	112	--	81	--	--
Upland plains hardwoods	2,806	23	165	124	929	87	390	868	73	64	--	20	63	--
Elm-ash-cottonwood	14,765	209	502	709	460	1,558	4,620	3,588	1,698	126	927	368	--	--
Cottonwood	8,349	--	8	320	-16	440	1,675	2,911	1,204	371	954	482	--	--
Willow	154	8	113	11	--	--	22	--	--	--	--	--	--	--
Lowland plains hardwoods	19,799	273	357	569	1,912	1,095	3,821	5,380	3,377	1,552	853	493	30	87
Upland elm-ash-locust	1,814	202	216	274	180	26	481	97	70	110	99	--	59	--
Nonstocked	256	76	13	--	17	--	105	28	14	3	--	--	--	--
All types	64,037	1,367	1,398	2,953	5,364	4,556	13,059	14,930	8,973	3,574	5,027	2,187	516	133

[1/] International 1/4-inch rule.

Table 83.--Net annual growth of growing stock on commercial forest land by forest type, stand-size class, and basal-area class, Kansas, 1980

(In thousand cubic feet)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Eastern redcedar-hardwood															
Sawtimber	82	--	--	--	--	--	--	--	--	--	--	82	--	--	--
Poletimber	-7	--	--	--	--	--	--	-25	18	--	--	--	--	--	--
Sapling & seedling	108	--	7	9	6	20	66	--	--	--	--	--	--	--	--
All stands	183	--	7	9	6	20	66	-25	18	--	--	82	--	--	--
Oak-hickory															
Sawtimber	2,831	--	--	36	16	188	223	284	265	810	230	640	139	--	--
Poletimber	2,005	--	--	--	-1	36	176	271	414	257	84	627	141	--	--
Sapling & seedling	375	-37	-1	101	8	214	39	22	1	25	3	--	--	--	--
All stands	5,211	-37	-1	137	23	438	438	577	680	1,092	317	1,267	280	--	--
Post-blackjack oak															
Sawtimber	79	--	--	-20	--	--	15	6	47	31	--	--	--	--	--
Poletimber	438	--	--	--	--	--	--	--	35	83	91	210	19	--	--
Sapling & seedling	60	--	--	2	--	--	3	3	--	--	52	--	--	--	--
All stands	577	--	--	-18	--	--	18	9	82	114	143	210	19	--	--
Upland plains hardwoods															
Sawtimber	466	--	--	--	16	30	27	31	144	131	--	--	87	--	--
Poletimber	721	--	--	5	--	18	143	109	9	119	154	164	--	--	--
Sapling & seedling	130	--	--	12	9	25	--	63	6	15	--	--	--	--	--
All stands	1,317	--	--	17	25	73	170	203	159	265	154	164	87	--	--
Elm-ash-cottonwood															
Sawtimber	4,270	--	--	50	71	251	184	330	696	245	479	490	924	550	--
Poletimber	1,072	--	--	-4	--	42	147	112	61	114	13	587	--	--	--
Sapling & seedling	768	-24	7	93	145	401	97	-71	85	7	28	--	--	--	--
All stands	6,110	-24	7	139	216	694	428	371	842	366	520	1,077	924	550	--
Cottonwood															
Sawtimber	2,060	--	4	13	--	61	104	--	305	163	161	483	289	269	208
Poletimber	261	--	--	--	--	--	89	--	9	--	163	--	--	--	--
Sapling & seedling	38	--	2	--	6	--	--	--	--	30	--	--	--	--	--
All stands	2,359	--	6	13	6	61	193	--	314	193	324	483	289	269	208

(Table 83 continued on next page)

(Table 83 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Willow															
Sawtimber	4	--	--	--	--	--	--	--	--	--	--	4	--	--	--
Poletimber	10	--	--	10	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	31	2	--	--	--	--	29	--	--	--	--	--	--	--	--
All stands	45	2	--	10	--	--	29	--	--	--	--	4	--	--	--
Lowland plains hardwoods															
Sawtimber	4,759	--	--	12	62	208	632	364	658	825	492	1,221	285	--	--
Poletimber	1,138	--	18	24	--	--	111	80	181	115	87	522	--	--	--
Sapling & seedling	381	--	10	8	61	196	49	19	38	--	--	--	--	--	--
All stands	6,278	--	28	44	123	404	792	463	877	940	579	1,743	285	--	--
Upland elm-ash-locust															
Sawtimber	272	--	--	3	4	7	64	47	50	70	27	--	--	--	--
Poletimber	388	--	--	--	9	--	27	135	21	41	26	129	--	--	--
Sapling & seedling	378	-2	95	36	17	94	48	23	46	16	5	--	--	--	--
All stands	1,038	-2	95	39	30	101	139	205	117	127	58	129	--	--	--
Nonstocked	112	2	44	4	15	32	15	--	--	--	--	--	--	--	--
All types															
Sawtimber	14,823	--	4	94	169	745	1,249	1,062	2,165	2,275	1,389	2,920	1,724	819	208
Poletimber	6,026	--	18	35	8	96	693	682	748	729	618	2,239	160	--	--
Sapling & seedling	2,269	-61	120	261	252	950	331	59	176	93	88	--	--	--	--
Nonstocked	112	2	44	4	15	32	15	--	--	--	--	--	--	--	--
All stands	23,230	-59	186	394	444	1,823	2,288	1,803	3,089	3,097	2,095	5,159	1,884	819	208

Table 84.--Net annual growth of sawtimber on commercial forest land by forest type, stand-size class, and basal-area class, Kansas, 1980

(In thousand board feet)[1/]

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Eastern redcedar-hardwood															
Sawtimber	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Poletimber	35	--	--	--	--	--	--	16	19	--	--	--	--	--	--
Sapling & seedling	64	--	--	17	10	30	7	--	--	--	--	--	--	--	--
All stands	99	--	--	17	10	30	7	16	19	--	--	--	--	--	--
Oak-hickory															
Sawtimber	11,265	--	--	--	66	1,329	1,180	1,191	1,273	2,974	664	2,162	426	--	--
Poletimber	3,840	--	--	--	--	29	253	253	515	857	159	1,643	131	--	--
Sapling & seedling	562	-204	-3	74	-165	765	85	50	-75	27	8	--	--	--	--
All stands	15,667	-204	-3	74	-99	2,123	1,518	1,494	1,713	3,858	831	3,805	557	--	--
Post-blackjack oak															
Sawtimber	153	--	--	-60	--	--	26	11	97	79	--	--	--	--	--
Poletimber	164	--	--	--	--	--	--	--	31	41	78	14	--	--	--
Sapling & seedling	11	--	--	--	--	--	4	7	--	--	--	--	--	--	--
All stands	328	--	--	-60	--	--	30	18	128	120	78	14	--	--	--
Upland plains hardwoods															
Sawtimber	1,439	--	--	--	102	95	52	81	201	344	--	--	564	--	--
Poletimber	1,274	--	--	--	--	47	60	56	--	436	106	569	--	--	--
Sapling & seedling	93	--	--	--	42	19	--	--	4	28	--	--	--	--	--
All stands	2,806	--	--	--	144	161	112	137	205	808	106	569	564	--	--
Elm-ash-cottonwood															
Sawtimber	12,797	--	--	219	334	1,398	509	1,070	1,908	1,011	728	1,576	2,419	1,625	--
Poletimber	1,023	--	--	-4	--	42	198	134	97	144	15	397	--	--	--
Sapling & seedling	945	-121	10	246	147	830	197	-536	13	30	129	--	--	--	--
All stands	14,765	-121	10	461	481	2,270	904	668	2,018	1,185	872	1,973	2,419	1,625	--
Cottonwood															
Sawtimber	8,059	--	22	36	--	170	352	--	1,704	469	373	1,654	1,295	1,191	793
Poletimber	273	--	--	--	--	--	311	--	-38	--	--	--	--	--	--
Sapling & seedling	17	--	8	--	--	--	--	--	--	9	--	--	--	--	--
All stands	8,349	--	30	36	--	170	663	--	1,666	478	373	1,654	1,295	1,191	793

(Table 84 continued on next page)

[1/] International 1/4-inch rule.

(Table 84 continued)

Forest type and stand-size class	All classes	Basal-area class (square feet per acre)													
		0-10	11-20	21-30	31-40	41-50	51-60	61-70	71-80	81-90	91-100	101-120	121-150	151-180	181+
Willow															
Sawtimber	22	--	--	--	--	--	--	--	--	--	--	22	--	--	--
Poletimber	11	--	--	11	--	--	--	--	--	--	--	--	--	--	--
Sapling & seedling	121	8	--	--	--	--	113	--	--	--	--	--	--	--	--
All stands	154	8	--	11	--	--	113	--	--	--	--	22	--	--	--
Lowland plains hardwood															
Sawtimber	15,423	--	--	48	300	693	1,596	1,236	1,600	2,178	2,072	4,594	1,106	--	--
Poletimber	3,353	--	--	19	--	--	1,123	412	799	444	20	536	--	--	--
Sapling & seedling	1,023	--	45	-6	159	470	149	159	47	--	--	--	--	--	--
All stands	19,799	--	45	61	459	1,163	2,868	1,807	2,446	2,622	2,092	5,130	1,106	--	--
Upland elm-ash-locust															
Sawtimber	921	--	--	8	10	12	30	116	141	537	67	--	--	--	--
Poletimber	417	--	--	--	195	--	53	83	9	3	61	13	--	--	--
Sapling & seedling	476	--	65	59	75	135	87	--	31	11	13	--	--	--	--
All stands	1,814	--	65	67	280	147	170	199	181	551	141	13	--	--	--
Nonstocked	256	--	159	8	34	50	5	--	--	--	--	--	--	--	--
All types															
Sawtimber	50,079	--	22	251	812	3,697	3,745	3,705	6,924	7,592	3,904	10,008	5,810	2,816	793
Poletimber	10,390	--	--	26	195	118	1,998	954	1,432	1,925	439	3,172	131	--	--
Sapling & seedling	3,312	-317	125	390	268	2,249	642	-320	20	105	150	--	--	--	--
Nonstocked	256	--	159	8	34	50	5	--	--	--	--	--	--	--	--
All stands	64,037	-317	306	675	1,309	6,114	6,390	4,339	8,376	9,622	4,493	13,180	5,941	2,816	793

Table 85.--Net annual growth of growing stock on wooded strips by species group and Forest Survey Unit, Kansas, 1980

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit		
		North-eastern Unit	South-eastern Unit	Western Unit
SOFTWOODS				
Eastern redcedar	107	11	--	96
Total	107	11	--	96
HARDWOODS				
Bur oak	157	11	21	125
Select white oak	41	--	41	--
Other white oak	--	--	--	--
Select red oak	45	8	37	--
Other red oak	24	9	15	--
Select hickory	9	8	1	--
Other hickory	22	7	15	--
Pecan	10	--	10	--
Hard maple	--	--	--	--
Soft maple	120	95	25	--
Ash	360	96	70	194
Cottonwood	-32	92	-316	192
Basswood	26	26	--	--
Elm	199	128	66	5
Black walnut	107	75	32	--
Willow	34	20	6	8
Boxelder	99	71	28	--
Hackberry	840	201	411	228
Sycamore	88	53	35	--
Other hardwoods	196	153	43	--
Total	2,345	1,053	540	752
All species	2,452	1,064	540	848

Table 86.--Net annual growth of sawtimber on wooded strips by species group and Forest Survey Unit, Kansas, 1980

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit		
		North-eastern Unit	South-eastern Unit	Western Unit
SOFTWOODS				
Eastern redcedar	53	--	--	53
Total	53	--	--	53
HARDWOODS				
Bur oak	581	36	81	464
Select white oak	--	--	--	--
Other white oak	--	--	--	--
Select red oak	99	--	99	--
Other red oak	78	52	26	--
Select hickory	--	--	--	--
Other hickory	20	--	20	--
Pecan	28	--	28	--
Hard maple	--	--	--	--
Soft maple	221	174	47	--
Ash	1,272	865	90	317
Cottonwood	1,806	802	-624	1,628
Basswood	12	12	--	--
Elm	154	72	82	--
Black walnut	180	137	43	--
Willow	1,690	531	27	1,132
Boxelder	159	44	115	--
Hackberry	2,178	730	1,173	275
Sycamore	186	60	126	--
Other hardwoods	488	356	132	--
Total	9,152	3,871	1,465	3,816
All species	9,205	3,871	1,465	3,869

[1/] International 1/4-inch rule.

Table 87.--Timber removals from growing stock on commercial forest land, by species group and Forest Survey Unit, Kansas, 1980

(In thousand cubic feet)

Species group	All Units	Forest Survey Unit: North-eastern Unit	South-eastern Unit	Western Unit
SOFTWOODS				
Eastern redcedar	89	40	14	35
Total	89	40	14	35
HARDWOODS				
Bur oak	1,303	604	360	339
Select white oak	700	434	266	--
Other white oak	480	41	439	--
Select red oak	1,195	573	604	18
Other red oak	703	341	362	--
Select hickory	168	115	53	--
Other hickory	106	58	48	--
Pecan	85	--	85	--
Hard maple	15	3	12	--
Soft maple	500	201	297	2
Ash	1,629	451	888	290
Cottonwood	1,935	893	559	483
Basswood	17	17	--	--
Elm	685	280	337	68
Black walnut	1,307	787	508	12
Hackberry	1,220	437	672	111
Sycamore	320	70	237	13
Other hardwoods[1/]	1,526	694	530	302
Total	13,894	5,999	6,257	1,638
All species	13,983	6,039	6,271	1,673

[1/] Includes willow and boxelder species groups.

Table 88.--Timber removals from sawtimber on commercial forest land, by species group and Forest Survey Unit, Kansas, 1980

(In thousand board feet)[1/]

Species group	All Units	Forest Survey Unit: North-eastern Unit	South-eastern Unit	Western Unit
SOFTWOODS				
Eastern redcedar	324	132	30	162
Total	324	132	30	162
HARDWOODS				
Bur oak	4,771	2,002	1,721	1,048
Select white oak	1,881	1,203	678	--
Other white oak	830	94	736	--
Select red oak	3,529	1,620	1,832	77
Other red oak	2,199	1,082	1,117	--
Select hickory	527	344	183	--
Other hickory	257	157	100	--
Pecan	394	4	389	1
Hard maple	41	8	33	--
Soft maple	2,126	699	1,422	5
Ash	5,484	1,538	3,058	888
Cottonwood	9,154	4,334	3,146	1,674
Basswood	66	65	1	--
Elm	2,538	936	1,362	240
Black walnut	8,281	4,977	3,204	100
Hackberry	4,890	1,585	2,879	426
Sycamore	1,611	321	1,220	70
Other hardwoods[2/]	4,350	1,951	1,504	895
Total	52,929	22,920	24,585	5,424
All species	53,253	23,052	24,615	5,586

[1/] International 1/4-inch rule.

[2/] Includes willow and boxelder species groups.

Table 89.--Timber removals[1] from growing stock and sawtimber on commercial forest land by species group, Kansas, 1964 and 1980

Species group	Growing stock		Sawtimber	
	1964[2]	1980	1964[2]	1980
	Thousand cubic feet		Thousand board feet[3]	
SOFTWOODS				
Eastern redcedar	21	89	--	324
Total	21	89	--	324
HARDWOODS				
Bur oak	953	1,303	3,604	4,771
Select white oak	120	700	502	1,881
Other white oak	295	480	493	830
Select red oak	156	1,195	169	3,529
Other red oak	492	703	1,455	2,199
Select hickory	330	168	981	527
Other hickory	209	106	479	257
Pecan	72	85	257	394
Hard maple	12	15	4	41
Soft maple	667	500	2,732	2,126
Ash	607	1,629	1,550	5,484
Cottonwood	1,120	1,935	4,183	9,154
Basswood	19	17	11	66
Elm	848	685	2,539	2,538
Black walnut	1,180	1,307	7,240	8,281
Hackberry	626	1,220	2,351	4,890
Sycamore	259	320	903	1,611
Other hardwoods[4]	314	1,526	547	4,350
Total	8,279	13,894	30,000	52,929
All species	8,300	13,983	30,000	53,253

[1] Removals in 1980 are trend-level removals.

[2] Figures have been adjusted from those published after the 1966 survey to conform to 1980 volumes because of changes in survey definitions and procedures.

[3] International 1/4-inch rule.

[4] Includes willow and boxelder species groups.

Table 90.--Timber removals from growing stock and sawtimber on commercial forest land by item and species category, Kansas, 1980

Item	All species	Softwoods	Oak	Elm-hackberry	Ash	Cottonwood	Walnut	Other hardwoods
				Species category				
GROWING STOCK								
				-Thousand cubic feet-				
ROUNDWOOD PRODUCTS								
Saw logs	4,340	66	730	638	336	940	1,138	492
Veneer logs	72	--	12	--	--	--	60	--
Cooperage logs	40	--	40	--	--	--	--	--
Fuelwood	7,577	--	3,184	1,033	1,034	398	--	1,928
Posts	52	18	19	--	--	--	--	15
Total	12,081	84	3,985	1,671	1,370	1,338	1,198	2,435
LOGGING RESIDUE	755	--	231	69	137	140	109	69
OTHER REMOVALS	1,147	5	165	165	122	457	--	233
ALL TIMBER REMOVALS	13,983	89	4,381	1,905	1,629	1,935	1,307	2,737
SAWTIMBER								
				-Thousand board feet[1]-				
ROUNDWOOD PRODUCTS								
Saw logs	26,269	312	3,358	4,017	1,991	6,107	7,431	3,053
Veneer logs	475	--	59	--	--	--	416	--
Cooperage logs	237	--	237	--	--	--	--	--
Fuelwood	20,895	--	8,773	2,850	2,851	1,097	--	5,324
Posts	114	11	62	--	--	--	--	41
Total	47,990	323	12,489	6,867	4,842	7,204	7,847	8,418
LOGGING RESIDUE	1,637	--	327	125	315	293	434	143
OTHER REMOVALS	3,626	1	394	436	327	1,657	--	811
ALL TIMBER REMOVALS	53,253	324	13,210	7,428	5,484	9,154	8,281	9,372

[1] International 1/4-inch rule.

Table 91.--Net annual growth and removals of growing stock on commercial forest land by species group, Kansas, 1980

(In thousand cubic feet)

Species group	Net annual growth	Annual timber removals
SOFTWOODS		
Eastern redcedar	471	89
Total	471	89
HARDWOODS		
Bur oak	1,251	1,303
Select white oak	779	700
Other white oak	594	480
Select red oak	1,467	1,195
Other red oak	611	703
Select hickory	467	168
Other hickory	470	106
Pecan	254	85
Hard maple	94	15
Soft maple	941	500
Ash	1,958	1,629
Cottonwood	2,525	1,935
Basswood	199	17
Elm	678	685
Black walnut	2,167	1,307
Hackberry	4,454	1,220
Sycamore	590	320
Other hardwoods[1]	3,260	1,526
Total	22,759	13,894
All species	23,230	13,983

[1] Includes willow and boxelder species groups.

Table 92.--Net annual growth and removals of sawtimber on commercial forest land by species group, Kansas, 1980

(In thousand board feet)[1/]

Species group	Net annual growth	Annual timber removals
SOFTWOODS		
Eastern redcedar	90	324
Total	90	324
HARDWOODS		
Bur oak	4,255	4,771
Select white oak	2,041	1,881
Other white oak	460	830
Select red oak	7,275	3,529
Other red oak	1,179	2,199
Select hickory	953	527
Other hickory	1,060	257
Pecan	1,113	394
Hard maple	607	41
Soft maple	3,170	2,126
Ash	4,768	5,484
Cottonwood	8,773	9,154
Basswood	360	66
Elm	-2,234	2,538
Black walnut	5,911	8,281
Hackberry	13,246	4,890
Sycamore	2,403	1,611
Other hardwoods[2/]	8,607	4,350
Total	63,947	52,929
All species	64,037	53,253

[1/] International 1/4-inch rule.

[2/] Includes willow and boxelder species groups.

Table 93.--Net annual growth and removals of growing stock on commercial forest land by ownership class and softwoods and hardwoods, Kansas, 1980

(In thousand cubic feet)

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
PUBLIC						
National Forest	--	--	--	--	--	--
Misc. federal	1,020	2	1,018	13	--	13
Indian	25	--	25	6	--	6
State	316	--	316	--	--	--
County & municipal	152	--	152	--	--	--
Total	1,513	2	1,511	19	--	19
PRIVATE						
Farmer and Misc. private	21,717	469	21,248	13,964	89	13,875
All owners	23,230	471	22,759	13,983	89	13,894

Table 94.--Net annual growth and removals of sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Kansas, 1980

(In thousand board feet)[1/]

Ownership class	Net annual growth			Annual timber removals		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
PUBLIC						
National Forest	--	--	--	--	--	--
Misc. federal	2,658	--	2,658	33	--	33
Indian	59	--	59	17	--	17
State	866	--	866	--	--	--
County & municipal	988	--	988	--	--	--
Total	4,571	--	4,571	50	--	50
PRIVATE						
Farmer and Misc. private	59,466	90	59,376	53,203	324	52,879
All owners	64,037	90	63,947	53,253	324	52,929

[1/] International 1/4-inch rule.

Table 95.--Annual mortality of growing stock on commercial forest land by softwoods and hardwoods, Kansas, 1964 and 1980

(In thousand cubic feet)

Species	1964[1/]	1980
Softwoods	--	28
Hardwoods	3,280	3,739
All species	3,280	3,767

[1/] Figures have been adjusted from those published after the 1965 survey to conform to 1980 volumes because of changes in survey definitions and procedures.

Table 96.--Annual mortality of growing stock on commercial forest land by species group and cause, Kansas, 1980

(In thousand cubic feet)

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
SOFTWOODS								
Eastern redcedar	28	--	--	--	--	--	28	--
Total	28	--	--	--	--	--	28	--
HARDWOODS								
Bur oak	220	--	117	4	--	6	--	93
Select white oak	94	--	22	--	28	--	--	44
Other white oak	46	--	--	12	--	--	--	34
Select red oak	210	--	77	--	--	42	--	91
Other red oak	216	--	115	--	--	52	--	49
Select hickory	39	--	29	--	--	--	--	10
Other hickory	10	--	7	--	--	--	--	3
Pecan	--	--	--	--	--	--	--	--
Hard maple	--	--	--	--	--	--	--	--
Soft maple	12	--	--	--	--	--	--	12
Ash	177	--	20	--	--	10	3	144
Cottonwood	853	122	91	--	66	153	--	421
Basswood	6	--	6	--	--	--	--	--
Elm	1,283	7	865	8	--	27	--	376
Black walnut	223	--	55	5	--	--	--	163
Willow	57	--	17	--	--	--	--	40
Boxelder	40	--	--	--	--	35	5	--
Hackberry	158	--	93	6	--	--	--	59
Sycamore	69	--	--	--	--	--	--	69
Other hardwoods	26	--	--	--	--	--	--	26
Total	3,739	129	1,514	35	94	325	8	1,634
All species	3,767	129	1,514	35	94	325	36	1,634

Table 97.--Annual mortality of sawtimber on commercial forest land by species group and cause, Kansas, 1980

(In thousand board feet)[1/]

Species group	All causes	Cause						
		Insects	Disease	Fire	Animals	Weather	Suppression	Unknown and other
SOFTWOODS								
Eastern redcedar	157	--	--	--	--	--	157	--
Total	157	--	--	--	--	--	157	--
HARDWOODS								
Bur oak	484	--	119	21	--	28	--	316
Select white oak	247	--	93	--	133	--	--	21
Other white oak	91	--	--	23	--	--	--	68
Select red oak	660	--	356	--	--	174	--	130
Other red oak	1,145	--	624	--	--	292	--	229
Select hickory	71	--	26	--	--	--	--	45
Other hickory	34	--	34	--	--	--	--	--
Pecan	--	--	--	--	--	--	--	--
Hard maple	--	--	--	--	--	--	--	--
Soft maple	56	--	--	--	--	--	--	56
Ash	716	--	89	--	--	48	--	579
Cottonwood	2,651	614	371	--	332	459	--	875
Basswood	--	--	--	--	--	--	--	--
Elm	4,295	30	2,944	--	--	126	--	1,195
Black walnut	773	--	135	26	--	--	--	612
Willow	85	--	85	--	--	--	--	--
Boxelder	--	--	--	--	--	--	--	--
Hackberry	599	--	397	30	--	--	--	172
Sycamore	195	--	--	--	--	--	--	195
Other hardwoods	60	--	--	--	--	--	--	60
Total	12,162	644	5,273	100	465	1,127	--	4,553
All species	12,319	644	5,273	100	465	1,127	157	4,553

[1/] International 1/4-inch rule.

Table 98.--Annual mortality of growing stock and sawtimber on commercial forest land by ownership class and softwoods and hardwoods, Kansas, 1980

Ownership class	Growing stock			Sawtimber		
	All species	Softwoods	Hardwoods	All species	Softwoods	Hardwoods
	Thousand cubic feet			Thousand board feet[1/]		
National Forest	--	--	--	--	--	--
Miscellaneous federal	36	--	36	127	--	127
Indian	--	--	--	--	--	--
State	--	--	--	--	--	--
County and municipal	--	--	--	--	--	--
Farmer	2,027	28	1,999	7,104	157	6,947
Misc. private	1,704	--	1,704	5,088	--	5,088
All owners	3,767	28	3,739	12,319	157	12,162

[1/] International 1/4-inch rule.

Table 99.--Output of timber products by product, softwoods and hardwoods, and source of material, Kansas, 1980

Product and softwoods and hardwoods	Standard units	Total		Roundwood products: Growing stock		Roundwood products: Nongrowing stock		Plant byproducts	
		No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet	No. of units	Thousand cubic feet
SAW LOGS									
Softwood	Thousand board feet[1/]	321	66	321	66	--	--	--	--
Hardwood		31,565	5,036	26,789	4,274	4,776	762	--	--
Total		31,886	5,102	27,110	4,340	4,776	762	--	--
VENEER LOGS									
Softwood	Thousand board feet[1/]	--	--	--	--	--	--	--	--
Hardwood		537	81	473	72	64	9	--	--
Total		537	81	473	72	64	9	--	--
COOPERAGE									
Softwood	Thousand board feet[1/]	--	--	--	--	--	--	--	--
Hardwood		264	44	240	40	24	4	--	--
Total		264	44	240	40	24	4	--	--
FUELWOOD									
Softwood	Standard cords[2/]	160	11	--	--	--	--	160	11
Hardwood		272,926	19,098	108,285	7,577	146,715	10,266	17,926	1,255
Total		273,086	19,109	108,285	7,577	146,715	10,266	18,086	1,266
POSTS									
Softwood	Thousand pieces	35	26	24	18	11	8	--	--
Hardwood		315	177	61	34	254	143	--	--
Total		350	203	85	52	265	151	--	--
OTHER[3/]									
Softwood	Thousand cubic feet	6	6	--	--	--	--	6	6
Hardwood		470	470	--	--	--	--	470	470
Total		476	476	--	--	--	--	476	476
ALL PRODUCTS									
Softwood	Thousand cubic feet	--	109	--	84	--	8	--	17
Hardwood		--	24,906	--	11,997	--	11,184	--	1,725
Total		--	25,015	--	12,081	--	11,192	--	1,742

[1/] International 1/4-inch rule.

[2/] Unpeeled, 128 cubic-foot basis.

[3/] Includes charcoal wood, livestock bedding, mulch, and specialty items.

Table 100.--Output of roundwood products by product, softwoods and hardwoods, and source of material, Kansas, 1980

(In thousand cubic feet)

Product and softwoods and hardwoods	All sources	Growing-stock trees			Rough and rotten trees	Salvable dead trees	Other sources
		Total	Sawtimber	Poletimber			
INDUSTRIAL PRODUCTS							
Saw logs							
Softwood	66	66	66	--	--	--	--
Hardwood	5,036	4,274	4,243	31	547	20	195
Subtotal	5,102	4,340	4,309	31	547	20	195
Veneer logs							
Softwood	--	--	--	--	--	--	--
Hardwood	81	72	72	--	--	--	9
Subtotal	81	72	72	--	--	--	9
Cooperage							
Softwood	--	--	--	--	--	--	--
Hardwood	44	40	40	--	4	--	--
Subtotal	44	40	40	--	4	--	--
Posts (Round and split)							
Softwood	26	18	6	12	--	1	7
Hardwood	177	34	24	10	6	--	137
Subtotal	203	52	30	22	6	1	144
All industrial products							
Softwood	92	84	72	12	--	1	7
Hardwood	5,338	4,420	4,379	41	557	20	341
Total	5,430	4,504	4,451	53	557	21	348
FUELWOOD							
Softwood	--	--	--	--	--	--	--
Hardwood	17,843	7,577	4,177	3,400	3,734	266	6,266
Total	17,843	7,577	4,177	3,400	3,734	266	6,266
ALL PRODUCTS							
Softwood	92	84	72	12	--	1	7
Hardwood	23,181	11,997	8,556	3,441	4,291	286	6,607
Total	23,273	12,081	8,628	3,453	4,291	287	6,614

Table 101.--Timber products from roundwood by species group and product, Kansas, 1980

Species group	All products	Saw logs		Veneer logs		Fuelwood		Posts		Cooperage logs	
	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet	Cords	Thousand cubic feet	Thousand pieces	Thousand cubic feet	Thousand board feet[1/]	Thousand cubic feet
SOFTWOODS											
Eastern redcedar	92	321	66	--	--	--	--	35	26	--	--
Total	92	321	66	--	--	--	--	35	26	--	--
HARDWOODS											
White oak	4,669	3,225	569	59	12	57,573	4,030	26	14	264	44
Red oak	3,645	2,931	521	--	--	44,427	3,111	27	13	--	--
Hickory	545	74	11	--	--	7,650	534	--	--	--	--
Pecan	57	348	57	--	--	--	--	--	--	--	--
Hard maple	25	--	--	--	--	400	25	--	--	--	--
Soft maple	779	1,543	246	--	--	7,650	533	--	--	--	--
Ash	2,685	2,183	367	--	--	33,150	2,318	--	--	--	--
Cottonwood	1,832	6,107	940	--	--	12,750	892	--	--	--	--
Basswood	18	10	1	--	--	250	17	--	--	--	--
Elm	1,116	1,458	222	--	--	12,750	894	--	--	--	--
Black walnut	1,609	8,955	1,362	478	69	2,550	178	--	--	--	--
Hackberry	1,931	3,193	504	--	--	20,400	1,427	--	--	--	--
Sycamore	397	1,417	218	--	--	2,550	179	--	--	--	--
Other hardwoods[2/]	3,873	121	18	--	--	52900	3,705	262	150	--	--
Total	23,181	31,565	5,036	537	81	255,000	17,843	315	177	264	44
All species	23,273	31,886	5,102	537	81	255,000	17,843	350	203	264	44

[1/] International 1/4-inch rule.

[2/] Includes willow and boxelder species groups.

Table 102.--Volume of primary plant residue by type of use and kind of material, Kansas, 1980

(In thousand cubic feet)

Type of use	Kind of wood residue							
	Total		Coarse[1/]		Fine[2/]		Bark	
	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood	Softwood	Hardwood
Fiber products	--	298.1	--	298.1	--	--	--	--
Industrial fuel	--	677.8	--	433.3	--	244.5	--	279.8
Domestic fuel	11.2	577.0	10.6	536.5	0.6	40.5	3.7	335.4
Miscellaneous[3/]	6.1	469.6	0.2	13.0	5.9	456.6	0.1	7.2
Not used[4/]	6.3	664.8	4.1	413.8	2.2	251.0	1.5	455.1
Total	23.6	2,687.3	14.9	1,694.7	8.7	992.6	5.3	1,077.5

[1/] Suitable for chipping such as slabs, edgings, veneer cores, etc.

[2/] Not suitable for chipping such as sawdust, veneer clippings, etc.

[3/] Livestock bedding, mulch, small dimension, charcoal, and specialty items.

[4/] Includes residue burned as waste.

Table 103.--All live shrub biomass yields on commercial forest land by species group and forest type, Kansas, 1981

(In pounds per acre green weight)

Species	Forest type									
	Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
TALL SHRUBS										
Eastern redcedar	244	11	2	13	3	--	--	--	9	--
Boxelder	--	--	--	--	13	39	--	10	--	--
Silver maple	--	--	--	--	10	--	--	--	--	--
Sugar maple	--	3	--	--	2	--	--	--	5	--
Ailanthus	--	75	--	--	--	--	--	--	--	--
Bitternut hickory	--	14	5	12	--	--	--	8	--	--
Shagbark hickory	5	14	--	2	--	--	--	--	1	--
Hackberry	--	29	5	18	20	1	--	107	3	2
Eastern redbud	--	34	20	44	23	--	--	9	16	--
Roughleaf dogwood	1,411	215	55	164	253	239	1,778	173	561	92
Hawthorn	--	12	--	--	14	--	--	--	3	--
White ash	--	8	--	--	--	--	--	--	4	--
Green ash	--	118	1	12	19	82	--	136	15	--
Honeylocust	1	8	--	18	29	--	--	8	30	6
Black walnut	--	13	--	25	3	--	--	12	5	--
Osage-orange	--	5	--	28	1	--	--	--	7	6
Red mulberry	--	5	2	3	7	37	177	2	9	--
Eastern hophornbeam	--	18	4	3	--	--	--	--	--	--
Eastern cottonwood	--	--	--	--	4	--	--	--	--	--
Black cherry	--	3	--	11	--	--	--	--	1	3
Chokecherry	--	11	--	2	2	30	--	11	4	--
Wild plum	--	--	--	--	3	--	--	3	2	--
Pawpaw	--	7	--	15	2	--	--	21	--	--
White oak	--	--	46	--	--	--	--	--	--	--
Bur oak	--	4	1	1	--	--	--	4	--	--
Chinkapin oak	24	15	1	5	--	--	--	10	5	--
Northern red oak	5	8	8	--	--	--	--	2	8	--
Black oak	1	5	--	--	--	--	--	--	10	--
Beaked hazel	931	32	--	--	--	--	--	25	--	--
Prickly ash	--	--	--	30	58	--	--	--	3	--
Viburnum	--	5	--	1	--	--	--	--	--	--
Elder	--	6	--	--	19	--	--	--	--	--
Sumac	39	22	28	1	7	--	--	4	49	70
Buttonbush	--	--	--	--	2	--	--	--	--	--
Wahoo	--	4	--	--	--	--	--	2	--	--
Willow	--	--	--	--	29	28	694	1	--	3
Sassafras	--	2	--	--	--	--	--	--	--	--
American basswood	--	3	--	15	--	2	--	--	--	--
American elm	46	66	22	49	39	--	--	148	108	7
Siberian elm	--	5	--	--	--	--	--	--	--	--
Slippery elm	--	54	--	21	20	16	--	26	34	--
Total	2,707	834	200	493	582	474	2,649	722	892	189

(Table 103 continued on next page)

(Table 103 continued)

Species	Forest type									
	Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
LOW SHRUBS										
Virginia creeper	2	7	3	1	--	30	--	3	--	--
Gooseberry-currant	--	8	--	--	12	2	--	9	2	--
Raspberry-blackberry	--	--	1	--	--	--	8	1	3	--
Rose	--	3	--	--	1	--	--	--	6	4
American bladdernut	--	3	--	--	1	--	--	--	--	--
Bilberry-blueberry	--	2	--	--	--	--	--	--	--	--
Honeysuckle	--	--	--	7	7	13	--	6	2	--
Buckbrush	58	119	186	166	128	18	129	150	155	59
Poison ivy	--	6	2	2	10	58	--	8	4	6
Pipe-vine	--	--	2	1	--	--	--	--	--	--
Moonseed	--	4	--	--	1	--	--	3	--	--
Greenbrier	--	--	--	--	--	3	--	1	1	--
Grape	--	--	--	--	--	2	--	2	--	--
Total	60	152	194	177	160	126	137	183	173	69
All shrub species	2,767	986	394	670	742	600	2,786	905	1,065	258
Number of plots[1/]	20	265	26	42	206	32	4	213	90	33

[1/] Number of plots by forest type from which average yields were derived.

Table 104.--All live tree biomass yields on commercial forest land by species group and forest type, Kansas, 1981

(In pounds per acre green weight)

Species	Forest type									
	Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS										
Eastern redcedar	13,952	253	--	1,136	28	--	--	225	519	218
Total	13,952	253	--	1,136	28	--	--	225	519	218
HARDWOODS										
Bur oak	1,310	13,214	1,831	10,067	2,209	--	--	10,714	522	1,586
Select white oak	5,363	16,310	235	3,338	831	--	--	999	1,243	--
Other white oak	2,824	2,952	69,507	790	--	--	--	--	62	--
Select red oak	294	15,010	4,359	1,743	909	--	--	1,605	1,835	175
Other red oak	--	9,742	10,794	959	548	53	--	719	488	663
Select hickory	523	6,233	1,444	658	762	--	--	698	688	149
Other hickory	--	3,273	1,289	1,985	611	--	--	1,831	145	--
Pecan	--	3,185	--	315	621	--	--	95	349	--
Hard maple	--	935	--	--	472	--	--	79	364	--
Soft maple	--	127	--	--	5,336	388	--	1,877	186	148
Ash	597	3,014	--	2,354	17,211	2,504	5,626	5,155	3,565	2,161
Cottonwood	113	452	--	1,305	11,942	131,993	8,327	1,951	1,850	2,236
Basswood	--	1,082	--	3,152	188	1,266	--	319	447	--
Elm	2,899	4,530	913	7,587	10,127	1,787	1,534	7,445	11,455	6,111
Black walnut	3,832	4,845	1,105	16,248	2,555	842	--	14,537	3,238	386
Willow	--	113	--	107	4,065	1,925	40,718	360	557	377
Boxelder	--	205	--	713	5,834	1,781	1,741	2,875	406	1,153
Hackberry	1,232	2,504	274	13,739	6,751	1,522	170	29,074	3,111	1,528
Sycamore	--	924	--	619	2,375	477	--	3,595	553	254
Other hardwoods	1,561	2,473	516	6,651	9,389	8,505	1,498	8,726	9,315	7,547
Noncommercial species	7,163	3,541	429	11,043	4,955	45	--	3,816	5,448	6,534
Total	27,711	94,664	92,696	83,373	87,691	153,088	59,614	96,470	45,827	31,008
All species	41,663	94,917	92,696	84,509	87,719	153,088	59,614	96,695	46,346	31,226
Number of plots[1/]	20	265	27	42	206	37	4	213	90	33

[1/] Number of plots by forest type from which average yields were derived.

Table 105.--All live tree biomass on commercial forest land by species group and forest type, Kansas, 1981

(In green tons)

Species	All types	Forest type									
		Eastern redcedar-hardwood	Oak-hickory	Post-blackjack oak	Upland plains hardwoods	Elm-ash-cottonwood	Cottonwood	Willow	Lowland plains hardwoods	Upland elm-ash-locust	Non-stocked
SOFTWOODS											
Eastern redcedar	327,473	191,845	40,070	--	28,064	4,008	--	--	29,936	28,607	4,943
Total	327,473	191,845	40,070	--	28,064	4,008	--	--	29,936	28,607	4,943
HARDWOODS											
Bur oak	4,195,728	18,006	2,091,706	28,289	248,662	319,853	--	--	1,424,444	28,772	35,996
Select white oak	3,063,270	73,746	2,581,779	3,628	82,460	120,304	--	--	132,779	68,574	--
Other white oak	1,602,916	38,832	467,252	1,073,883	19,513	--	--	--	--	3,436	--
Select red oak	2,940,607	4,037	2,375,982	67,344	43,040	131,694	--	--	213,358	101,190	3,962
Other red oak	1,951,281	--	1,542,203	166,773	23,692	79,286	1,794	--	95,554	26,937	15,042
Select hickory	1,276,927	7,190	986,708	22,309	16,241	110,375	--	--	92,792	37,933	3,379
Other hickory	926,926	--	518,191	19,908	49,021	88,421	--	--	243,396	7,989	--
Pecan	633,788	--	504,246	--	7,786	89,917	--	--	12,575	19,264	--
Hard maple	246,808	--	147,954	--	--	68,317	--	--	10,448	20,089	--
Soft maple	1,069,121	--	20,155	--	--	772,645	13,213	--	249,481	10,270	3,357
Ash	4,063,618	8,210	477,086	--	58,152	2,492,180	85,263	11,814	685,297	196,554	49,062
Cottonwood	6,758,532	1,560	71,515	--	32,237	1,729,227	4,494,369	17,486	259,323	102,048	50,767
Basswood	386,444	--	171,258	--	77,858	27,178	43,118	--	42,362	24,670	--
Elm	4,249,130	39,858	717,096	14,107	187,401	1,466,383	60,844	3,221	989,815	631,686	138,719
Black walnut	3,756,931	52,690	766,988	17,073	401,339	369,970	28,655	--	1,932,843	178,600	8,773
Willow	847,383	--	17,939	--	2,632	588,569	65,544	85,509	47,907	30,718	8,565
Boxelder	1,390,074	--	32,515	--	17,602	844,819	60,639	3,657	382,291	22,376	26,175
Hackberry	5,858,598	16,942	396,428	4,240	339,359	977,604	51,832	358	3,865,563	171,587	34,685
Sycamore	1,035,946	--	146,290	--	15,292	343,938	16,250	--	477,916	30,488	5,772
Other hardwoods	4,082,630	21,463	391,456	7,972	164,268	1,359,554	289,607	3,145	1,160,155	513,686	171,324
Noncommercial species	2,613,645	98,496	560,570	6,633	272,761	717,505	1,519	--	507,371	300,481	148,309
Total	52,950,303	381,030	14,985,317	1,432,159	2,059,316	12,697,739	5,212,647	125,190	12,825,670	2,527,348	703,887
All species	53,277,776	572,875	15,025,387	1,432,159	2,087,380	12,701,747	5,212,647	125,190	12,855,606	2,555,955	708,830

Table 106.--All live tree biomass weight by species group and tree biomass component, Kansas, 1981

(In green tons)

Species group	All components	Biomass component				
		1- to 5-inch trees	Growing stock		Cull	
			Boles	Tops and limbs	Boles	Tops and limbs
SOFTWOODS						
Eastern redcedar	327,473	185,195	76,966	39,582	16,506	9,224
Total	327,473	185,195	76,966	39,582	16,506	9,224
HARDWOODS						
Bur oak	4,195,728	94,805	2,185,284	1,090,531	501,823	323,285
Select white oak	3,063,270	208,450	1,240,484	603,806	645,782	364,748
Other white oak	1,602,916	302,447	722,386	337,549	149,595	90,939
Select red oak	2,940,607	127,093	1,626,511	806,614	199,869	180,520
Other red oak	1,951,281	113,136	995,059	513,525	194,493	135,068
Select hickory	1,276,927	214,208	636,484	296,069	76,937	53,229
Other hickory	926,926	207,121	429,551	199,223	58,796	32,235
Pecan	633,788	55,007	325,064	158,518	59,919	35,280
Hard maple	246,808	80,305	100,799	51,224	9,013	5,467
Soft maple	1,069,121	37,415	568,119	280,018	98,492	85,077
Ash	4,063,618	643,970	1,798,134	950,412	395,050	276,052
Cottonwood	6,758,532	42,901	4,089,652	1,992,493	350,178	283,308
Basswood	386,444	71,834	160,590	78,287	45,154	30,579
Elm	4,249,130	1,675,863	954,679	460,438	716,885	441,265
Black walnut	3,756,931	462,570	1,810,684	897,619	359,420	226,638
Willow	847,383	70,076	363,096	182,509	129,187	102,515
Boxelder	1,390,074	181,341	325,485	161,496	412,301	309,451
Hackberry	5,858,598	897,608	2,696,133	1,312,562	589,163	363,132
Sycamore	1,035,946	36,229	621,590	293,367	45,665	39,095
Other hardwoods	4,082,630	897,973	1,065,951	520,732	967,516	630,458
Noncommercial species	2,613,645	1,077,736	--	--	1,013,171	522,738
Total	52,950,303	7,498,088	22,715,735	11,186,992	7,018,409	4,531,079
All species	53,277,776	7,683,283	22,792,701	11,226,574	7,034,915	4,540,303

Table 107.--All live tree biomass volume by species group and tree biomass component, Kansas, 1981

(In thousand cubic feet)

Species group	All components	Biomass component				
		1- to 5-inch trees	Growing stock		Cull	
			Boles	Tops and limbs	Boles	Tops and limbs
SOFTWOODS						
Eastern redcedar	17,701	10,010	4,160	2,140	892	499
Total	17,701	10,010	4,160	2,140	892	499
HARDWOODS						
Bur oak	368,784	34,164	179,043	89,298	40,528	25,751
Select white oak	109,230	7,157	43,999	21,433	23,271	13,370
Other white oak	56,862	10,384	25,633	11,992	5,449	3,404
Select red oak	103,985	4,364	56,954	28,258	7,408	7,001
Other red oak	68,077	3,829	34,501	17,850	6,940	4,957
Select hickory	44,514	7,249	22,187	10,323	2,783	1,972
Other hickory	32,220	7,009	15,003	6,961	2,087	1,160
Pecan	27,992	2,290	14,413	7,030	2,677	1,582
Hard maple	9,386	3,022	3,846	1,956	349	213
Soft maple	46,315	1,615	24,462	12,060	4,322	3,856
Ash	174,828	27,287	77,186	40,845	17,208	12,302
Cottonwood	294,105	1,818	177,508	86,499	15,405	12,875
Basswood	19,326	3,556	8,028	3,915	2,275	1,552
Elm	167,526	65,145	37,546	18,117	28,636	18,082
Black walnut	136,037	16,867	65,030	32,282	13,254	8,604
Willow	36,529	2,917	15,540	7,815	5,658	4,599
Boxelder	66,021	8,280	15,350	7,619	19,703	15,069
Hackberry	250,191	37,361	115,285	56,136	25,467	15,942
Sycamore	41,662	1,456	24,869	11,739	1,907	1,691
Other hardwoods	174,256	37,481	45,228	22,111	41,738	27,698
Noncommercial species	110,226	44,859	--	--	43,067	22,300
Total	2,338,072	328,110	1,001,611	494,239	310,132	203,980
All species	2,355,773	338,120	1,005,771	496,379	311,024	204,479

Table 108.--Removals,[1] net annual growth, and inventory of growing stock on commercial forest land, Kansas, 1981 and low removals option projections[2] to 2011.

(In million cubic feet)

Year	All species		
	Removals	Growth	Inventory
1981	14.0	23.2	711.3
1991	16.0	32.2	845.8
2001	21.1	35.0	1,001.7
2011	25.8	31.4	1,098.2

[1] Timber removals include volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

[2] Based on the following assumptions: (a) that the overall removals rate will be lower than that for the high removals option; (b) that the annual removals rates will differ for each 5-year period but that timber removals will increase at an average annual rate of 2.766 percent; (c) that the area of commercial forest land will decline but at an insignificant rate; (d) that radial growth will decline over time in relation to the increase of basal area per acre of trees; (e) that the intensity of forest management practised will continue at the rate indicated by recent trends; and (f) that the volume of "other" removals will drop during the period as more of these trees are utilized.

Table 109.--Removals,[1] net annual growth, and inventory of growing stock on commercial forest land, Kansas, 1981 and high removals option projections[2] to 2011.

(In million cubic feet)

Year	All species		
	Removals	Growth	Inventory
1981	14.0	23.2	711.3
1991	18.7	32.1	830.8
2001	27.2	35.5	944.7
2011	37.2	34.4	969.3

[1] Timber removals include volume "lost" due to land clearing, flooding, thinning, or changes in land use, in addition to timber cut and used.

[2] Based on the following assumptions: (a) that the overall removals rate will be higher than that for the low removals option; (b) that the annual removals rates will differ for each 5-year period but that timber removals will increase at an average annual rate of 5.338 percent; (c) that the area of commercial forest land will decline but at an insignificant rate; (d) that radial growth will decline over time in relation to the increase of basal area per acre of trees; (e) that the intensity of forest management practised will continue at the rate indicated by recent trends; and (f) that the volume of "other" removals will drop during the period as more of these trees are utilized.

Table 110.--Sampling errors[1/] for estimates smaller than the State totals[2/] of volume, net growth, removals, and area of commercial forest land, Kansas, 1981

Sampling error	Commercial forest area	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
Percent	Thousand acres	- - - Million cubic feet - - -			- - - Million board feet[3/] - - -		
1	7,250.4	8,813.5	825.4	4,046.0	46,135.7	3,349.3	21,493.3
2	1,812.6	2,203.4	206.3	1,011.5	11,533.9	837.3	5,373.3
3	805.6	979.3	91.7	449.6	5,126.2	372.1	2,388.1
4	453.2	550.8	51.6	252.9	2,883.5	209.3	1,343.3
5	290.0	352.5	33.0	161.8	1,845.4	134.0	859.7
10	72.5	88.1	8.3	40.5	461.4	33.5	214.9
15	32.2	39.2	3.7	18.0	205.0	14.9	95.5
20	18.1	22.0	2.1	10.1	115.3	8.4	53.7
25	11.6	14.1	1.3	6.5	73.8	5.4	34.4
50	2.9	3.5	0.3	1.6	18.5	1.3	8.6
100	0.7	0.9	0.1	0.4	4.6	0.3	2.1

[1/] At the 68-percent probability level.

[2/] Sampling errors for State totals are shown in the accuracy section of the Appendix.

[3/] International 1/4-inch rule.

Table 111.--Sampling errors[1/] for estimates smaller than the Survey Unit totals[2/] of volume, net growth, removals, and area of commercial forest land, Northeastern Survey Unit, Kansas, 1981

Sampling error	Commercial forest area	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
Percent	Thousand acres	- - - Million cubic feet - - -			- - - Million board feet[3/] - - -		
4	367.0	--	--	--	--	--	--
5	234.9	292.8	--	--	--	--	--
10	58.7	73.2	6.3	--	384.3	23.4	--
15	26.1	32.5	2.8	--	170.8	10.4	--
20	14.7	18.3	1.6	--	96.1	5.8	--
25	9.4	11.7	1.0	--	61.5	3.7	--
50	2.3	2.9	0.3	1.7	15.4	0.9	9.5
100	0.6	0.7	0.1	0.4	3.8	0.2	2.4

[1/] At the 68-percent probability level.

[2/] Sampling errors for Survey Unit totals are shown in the accuracy section of the Appendix.

[3/] International 1/4-inch rule.

Table 112.--Sampling errors[1/] for estimates smaller than the Survey Unit totals[2/] of volume, net growth, removals, and area of commercial forest land, Southeastern Survey Unit, Kansas, 1981

Sampling error	Commercial forest area	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
Percent	Thousand acres	- - - Million cubic feet - - -			- - - Million board feet[3/] - - -		
4	413.3	--	--	--	--	--	--
5	264.5	--	--	--	--	--	--
10	66.1	69.5	7.3	--	338.3	26.8	--
15	29.4	30.9	3.3	--	150.4	11.9	--
20	16.5	17.4	1.8	--	84.6	6.7	--
25	10.6	11.1	1.2	--	54.1	4.3	--
50	2.6	2.8	0.3	2.0	13.5	1.1	10.0
100	0.7	0.7	0.1	0.5	3.4	0.3	2.5

[1/] At the 68-percent probability level.

[2/] Sampling errors for Survey Unit totals are shown in the accuracy section of the Appendix.

[3/] International 1/4-inch rule.

Table 113.--Sampling errors[1/] for estimates smaller than the Survey Unit totals[2/] of volume, net growth, removals, and area of commercial forest land, Western Survey Unit, Kansas, 1981

Sampling error	Commercial forest area	Growing Stock			Sawtimber		
		Inventory	Growth	Removals	Inventory	Growth	Removals
Percent	Thousand acres	- - - Million cubic feet - - -			- - - Million board feet[3/] - - -		
10	129.9	--	--	--	--	--	--
15	57.7	115.1	--	--	563.1	--	--
20	32.5	64.8	--	--	316.7	7.0	--
25	20.8	41.4	2.5	--	202.7	4.5	--
50	5.2	10.4	0.6	1.6	50.7	1.1	4.8
100	1.3	2.6	0.2	0.4	12.7	0.3	1.2

[1/] At the 68-percent probability level.

[2/] Sampling errors for Survey Unit totals are shown in the accuracy section of the Appendix.

[3/] International 1/4-inch rule.

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The third inventory of the timber resource of Kansas shows a 1.4-percent increase in commercial forest area and a 42-percent gain in growing-stock volume between 1965 and 1980. Text and statistics are presented on area, volume, growth, mortality, removals, utilization, biomass, and future timber supply.

KEY WORDS: Area, timber volume, growth, mortality, removals.